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ADDRESS OF WELCOME TO THE NINTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF RAILWAY SURGEONS.

BY DR. M. C. STARKLOFF, HEALTH COMMISSIONER, ST. LOUIS, MO.

Gentlemen of the National Association of Railway Surgeons:

Impressed with the honor which has been delegated me to welcome you here to-day, permit me, in the name of the grand old city of St. Louis, in the name of the municipality, in the name of its citizens, in the name of its physicians, and, as health commissioner, to extend to you a most hearty and cordial welcome. In the active field of our profession, the study of railway surgery has made strides in directions of scientific investigation so extensive, that to-day railway surgery is in itself one of the progressive sciences, a specialty which requires a knowledge equal to that of any specialty in our profession. The homes of our city are open to the National Association of Railway Surgeons. St. Louis is noted for its hospitality; the physicians of St. Louis for their progress, congeniality and good-fellowship. Our ladies are the sweetest and prettiest on the continent, and the only fear that I entertain in welcoming you to our homes, is that the unmarried men take from us too many of the bright, blushing roses of our firesides (our maidens).

Recently, in looking over the surgical literature of the early part of the present century, I was forcibly struck by the following sentiment expressed within a present lifetime, April, 1850, by one of the most able and distinguished professors of the oldest medical school on the continent. "Let the declaration go forth with all the authority which can be

given it by the combined influence of the medical profession, that there is no cure for any disease, no single remedy, no happy combination of remedies for any disease which has ever affected humanity." That is to say,—that medicine and surgery in all the years from Æsculapius to that time had not advanced to the dignity of a science, but remained a simple art, based upon the empirical observation of what was good or bad for men. What can 1896 answer back to this grave utterance? What has the last half of the present century done for surgery? Let us review, briefly, the history of these few years, so full for the welfare of mankind.

Dr. R. B. Carter, in a paper on medicine and surgery, in "The Reign of Queen Victoria," says: "The anæsthetic age has changed the whole aspect of surgery. Prior to 1847, surgical operations were few in number and almost limited to the amputation of limbs, the removal of cancerous growths and other tumors, the resection of a few of the larger joints, cutting for stone, and the ligature of main arteries for aneurism. The pain suffered by patients was so great as to tax severely the endurance of the bravest and strongest and to depress seriously and beyond recall the powers of life. Death from shock was by no means uncommon, the patient sinking in a few hours from the actual suffering that he had undergone. It was a point of honor with surgeons in those days to abbreviate such agonies as much as possible and to cultivate mere speed in operating, as the highest and most valuable form of dexterity. Nothing was attempted which could not be done quickly, and an amputation, in the hands of a skilled surgeon, had almost the appearance of a feat of legerdermain. For the separation of a lower limb above the knee (of course not including dressing), twenty seconds have been known to suffice, while forty seconds was regarded as a period of time which no man was justified in exceeding."

In 1847 the anæsthetic age commenced. How sternly does this discovery teach that man must earn every boon from nature by his own incessant striving! And how strange that the simple chemical and physiological secret of ether should have hidden so long in its easy formula, undiscovered through all these waiting centuries, when pain was the omnipresent tyrant, which science could not control. Ether and chloroform had the key, but not until many years afterward did the hand of a citizen of the United States, an American dentist, Dr. Jackson, fit it into the golden doorway behind which sat waiting an angel of pity, kinder, more beneficent and more powerful than an Arabian fairy ever suddenly revealed in her divine beauty and bountifulness, to any prince or magician of the thousand and one tales.

To surgery, anæsthesia gave a sure control of anguish. To the surgeon, confidence, quiet, leisure. It came like a revelation to surgeons, that they need no longer be in such a frantic hurry. To those who have to be under the knife, it gives a sweet and complete oblivion; a world of "black velvet" tranquillity, of which these magic drugs keep unbounded store; and to awake grateful beyond words for the soft spell of peace. Anæsthesia gave a sure control of pain and robbed the operating room of its terrors, but afforded no help in the healing of wounds.

In 1858 the great French scientist, Louis Pasteur (to whom surgery owes a lasting debt of gratitude), began his memorable battle against the fallacious doctrine of spontaneous generation, and by its overthrow in 1860 he laid securely the foundation of the modern science of bacteriology. In 1865 a young surgeon in one of the Edinburgh hospitals was the first to see the vast merits of Pasteur's bacteriological labors. His practical mind, instinct with genius, seized upon and closed with the conception that the healing of wounds was prevented by the entrance of micro-organisms into them. Touched by this wand, difficulties fell before him. He began his great battle for antiseptic surgery that has in so short a time changed the whole aspect of surgery and led to such marvelous and beneficial results. This young man is now the venerable Sir Joseph Lister, whose splendid achievements have lighted up the dark places of surgery and transformed the treatment of wounds from a matter of uncertainty, and too often disastrous empiricism, into a scientific art of sure beneficence. Thanks to him, surgery has undergone a complete revolution which has deprived it of its terrors and extended almost without limit its efficacious powers.

To no class of surgeons do the benefits of

these discoveries appeal with greater force than to railway surgeons. Surgery, being the most practical of the medical sciences, necessarily attracts to it the cream of the medical profession, the greatest intellects, the greatest manipulative skill. In welcoming you to this city, gentlemen, I know that I am addressing the cream of the medical profession of this country.

AN ADDRESS*

By Hon. Alex. G. Cochran, General Solicitor, Missouri Pacific Railway, St. Louis, Mo.

Mr. Chairman, ladies and gentlemen, and members of the National Convention of Railway Surgeons: It affords me a great deal of pleasure to be with you to-night, and I very highly appreciate the honor conferred upon me by the invitation of your committee to address this distinguished assembly.

The newspapers stated that I was to deliver an address. I do not like the word "address," for somehow or other I always find that when I have anything to say I can always say it so much better if I can take men by the hand, look into their eyes and talk to them in the ordinary, everyday manner. That is the way I would like to feel toward you to-night. I know that all real good lawyers are good fellows, and I have no doubt that you will agree with me in saying that all good surgeons are good fellows, too. I have come here to-night in a quiet, unostentatious manner and shall not attempt any oratory, but just simply look at you and give you an informal talk.

It is a pleasure to me to look into your intelligent faces, and I want to speak to you just as if we were sitting down and having a conversation. You are railroad surgeons, I am a railroad lawyer. I have always felt that the professions of the law and of medicine were nearly akin. They are both splendid professions, requiring the strongest intellects and the greatest and closest application and labor. They are both professions with the highest possible standards, and there is no time, however long we may be spared to live upon this earth, when any man, who is a member of either profession, will be prepared to say that he knows all about it. On the contrary, it seems to me that the older we get, and the more knowledge that we acquire, the less we feel that we know about the great subjects to which we have devoted our lives. In this connection I desire to briefly relate a little incident which occurred some years ago. A young man, who had just graduated from the Harvard Law School, and lived in New York, was on his way home, and, of course, felt that he was a big man. He had his sheepskin in his pocket. His professors had shaken his hand and bade him God speed in going out into the commercial world. As he got on a boat at Fall River, he noticed on deck an old judge, a man who had known him from boyhood and was a great friend of his father. The young man went up to the judge, took him by the hand, and said: "Judge, I am all through studying law." "Well, now," the judge replied, "permit me to congratulate you. I have been studying law for upward of fifty years, and I feel that I have only just commenced."

When I remember the marvelous advances that have been made in surgery and medicine, even in the short span of my own life, I am almost appalled. When I was a boy the standard prescriptions for most ills for grown people and children were Dover's powders, castor oil and turpentine. (Laughter). I went through that treatment two or three times myself. Look at the progress medicine has made since that time! It has not come by accident. Far from it. It has come by your patient labor day and night, through months and years of the toiling men of your profession, who have bestowed the untold blessings upon humanity which they enjoy to-day. And yet with all your knowledge you have just simply picked a little of the surface, for beneath lies the great mine of wealth which is yet to be uncovered and shown to the world. This is true of law also, but eminently true of medicine and surgery. Take the new medicines that have been discovered. Think of all those wonderful medicines we have now, the products of coal tar. Think of cocaine. Look at the various other medicines which I cannot enumerate here, but which are familiar to you and have become known to you only in the last few years. Take surgery. Many of you remember the time—I remember it well—that when a man was known to have a wound of the intestines, the wisest and most skillful sur-

*Delivered at the Ninth Annual Meeting of the National Association of Railway Surgeons at St. Louis, April 30, 1896.

geons shook their heads after examining him, saying that the man has not one chance in a thousand to get well. During those days patients died from gunshot wounds of the abdomen. There was no hope for them; and yet to-day your medical journals and text books are full of the most wonderful resutls obtained by that wonderful discovery of what you call antiseptic surgery. In this connection it gives me great satisfaction and gratification to say that no greater honor is due any man, in the treatment of intestinal wounds and of intestinal obstruction, than to your distinguished president, Dr. Murphy. (Applause.)

I must not suffer myself to wander into these general fields of thought, because I do not want to occupy your attention for any great length of time. I want to make my remarks comparatively brief, and consequently I shall talk to you for a few minutes about the question of railway surgery and the connection between the departments. You are railroad surgeons, and we have upon the stage to-night a gentleman whom it has been an honor for me to know and to be associated with, who is at the head of the surgical and hospital department of the great system of roads with which I have the honor to be connected. What a blessing it has been to the great mass of employes engaged in the dangerous duty of railroading, to establish surgical departments on the various roads. Just think for a moment of what the condition of these poor boys would be if you withdrew this blessing from them. A train is running along through the country; there is a derailment, a collision, an accident of some kind. A poor fellow is thrown from the car, is crushed and bleeding. What are we to do with him? Who are we to communicate with? Probably the doctor at the nearest point, and very likely he is an insignificant doctor in railway surgery, because it is the exception, as we all know, to find a man who has devoted the attention, care and thought to surgery which are necessary for him to make a first-class surgeon. The country doctor may be a very estimable man, but unacquainted with such matters as these. The injured man may be taken to the nearest country hotel, or perhaps to the house of some good Samaritan, who takes him in, and then the country doctor with his medicines and appliances will try to treat the case. He is almost as helpless in following the treatment of the case as is the poor miserable wretch, who lies crushed and mangled before him. That used to be the case in years gone by. I know it was the case when I was a boy. But now that has all been changed. From the rank and file of surgeons and physicians you select men of peculiar ability. You select them because of their brains, their courage and intelligence, and who have been associated and connected with this vast network of roads which extend from the Atlantic to the Pacific. What is the result? A man is injured. What shall we do with him? We will send him to Dr. So-and-so, our surgeon. The mere fact of saying that Dr. So-and-so is our surgeon is a sufficient guarantee of the competency of the man. The matter is attended to quickly. A car and engine are hastily run, a surgeon is summoned, who instantly understands the character of the wounds. He knows what is necessary to be done in order to alleviate the suffering and save the life, and the Missouri Pacific Company and some other companies have done what I yet hope to see every railroad in the United States do, and which I believe every railroad in the United States will yet do, namely, establish in connection with their surgical department a splendid hospital service. (Applause.) We have a place for our injured; we do not need to take our patients to country hotels; we do not need to take them into the room of some good Samaritan who throws his house open; we do not need to take them to a partially furnished hospital, or one where the patient is not able to receive the careful attention which the seriousness of his case demands. I understand that when one of the employes of our road is injured, he is at once conveyed either to our great hospital here in St. Louis, or, if it is nearer, to our hospital in Kansas City. And when he gets there, what does he find? A perfectly fitted up establishment, presided over by brains; by men who have consecrated and devoted their lives to taking care of men who have been injured in the railway service. We have a chief surgeon with all the accumulated judgment of years, competent assistants in the hospital, and every appliance for proper treatment and every medicine that is needed—in short, we have a perfect and complete establishment, surrounded by trees, greensward and flowers,

and the sufferer may glance out of the window and lift his eyes to the azure blue above him. There he is kept and the United States can give him no better attention than is given him in this hospital. Every need is supplied and in his agony he has the most competent nurses to minister to his wants and to relieve him. He is kept there until he is well. This splendid hospital system is maintained by the slight contribution of the many men who are employed in the service, extending from the highest officers down to the men who receive the lowest salaries—just a small, trifling annual contribution maintains our hospital system. Gentlemen, I speak of it because I know of it, and I express again, for the purpose of emphasis, the hope that the day is not far distant when every great system of railroad in the United States will have adopted this policy.

I am pleased to say to you in this connection—and Dr. Outten will pardon me for making a remark in reference to the matter, which was the result of correspondence entirely with himself—that within the past year or two many inquiries have been made of Dr. Outten as to our system from some of the strongest roads in the East. I believe this system will yet prevail throughout this country. (Applause.)

I will touch on another thought. There was a time when the railroad surgeon was supposed to be a man paid to give testimony for the company that employed him. That was the general idea. We have got our lawyer and he must fight our case, and we have got our doctor and he must fight it, too, no matter what he thinks. He has no right to think. That was the general idea that prevailed in years gone by. How glad I am to know that this idea has disappeared. It no longer remains, and to-day the men who occupy positions as surgeons of these roads are men of the highest intelligence and highest character, and I want to say this, that there ought to be the closest interest and friendship existing between the legal and surgical departments of all these systems. No railroad is complete without its surgical department. Some say: "Can you not do without it?" Can you do without your hand? Can you do without your leg? Of course, you can get a wooden leg, but you are far from being a perfect man when you are maimed and crippled in that way. This is the case with a railroad without its surgical department. If you want to make it perfect you have got to have a surgical department, just as much so as a claim department or a law department. I take it, that we are all brothers in this matter, all working together for a common cause, for the good of the system with which we are connected and associated. There not only ought to be confidence and great friendship existing between the legal and surgical departments, but our entire relations ought to be founded upon one simple little word which we hear so often—*truth*. The utmost truth should prevail at all times. For instance, here is a man who is hurt; he brings a suit against the railway company for twenty-five thousand dollars. When I have such a case, my first impulse is to send for Dr. Outten, and I say to him: "This man is in your hospital. You have had him from the beginning and have treated him?" "Yes, sir," "You have examined his case and taken note of his symptoms from the beginning?" "Yes." He claims to be suffering from permanent injury; that he has railway spine or something of that kind, which condition is not visible, but which he says has paralyzed him. He says he cannot move, cannot eat, or do anything, and he thinks $25,000 would be a small sum. I ask Dr. Outten what he thinks of this case. I want to know what value Dr. Outten would be to me or his company if he turned to me at once and said there was nothing the matter with that fellow, if there was really something the matter with him? If he is paralyzed, or permanently injured, I want to know it. I want simply to know the truth, because I cannot act intelligently unless I do know it.

When a patient comes to you, you ask him a great many questions, how he is affected, whether his head aches or not, whether he has difficulty in breathing, etc.? If the man lies to you, you cannot diagnose his case, and you are apt to give him the wrong remedy. You want to know what is the matter. If Dr. Outten informs me that there is nothing the matter with the fellow, I advise my company, basing my opinion on the expert testimony given by Dr. Outten. I say to my company, that this claim is outrageous; that the man was injured to some degree and is

perhaps entitled to the reasonable remuneration of say, five hundred or a thousand dollars, but that it is nonsense to pay him fifteen or twenty thousand dollars; that I have consulted the surgical department and find that the man was not seriously injured. We go to trial and appear before a jury. This man produces surgeon after surgeon of the highest character and reputation and proves conclusively to the jury that he has sustained the permanent injury of which he complains. How can we stand up against a case like that? The verdict of a common ordinary jury is much larger than the reasonable amount by which you can compromise a case. On the other hand if the injury is not a serious one and is simulated, look at the vast value which accrues to the legal department in having a competent surgeon point out what is the actual condition which really exists. These points of evidence must be given to the lawyers. When a surgeon says that a man was not very much injured and is not entitled to a large amount of money and is prepared to demonstrate the man's condition to the jury, it means a good deal. So what we want is truth. If a man is badly hurt through the negligence of the corporation, and if there is any legal defense of his claim, of course he is entitled to recover a reasonable sum to cover his injuries, and I do not know of any railroad in the United States that wants to deny him the reasonable sum to which he is entitled. I am afraid, however, that there is not that close interest or close sympathy, which is a better word, existing between the legal and the surgical departments of the railroads that there ought to be. It may perhaps be our fault. I have no doubt it is partially the fault of lawyers who are generally very busy men and very much burdened with care and responsibility. On the other hand, it may be somewhat the fault of the chief surgeons of the road themselves and their assistants in not seeking to cultivate the closest and most friendly relations between the two departments. You can just mark this as the truth, that whenever you find a railway system where every department is operating in sympathy with every other department, when they are all striving for the common good of the system, you will find it to be a prosperous system and one that makes money when other systems go into bankruptcy.

Gentlemen, this is an interesting subject to me, because I have been at the head of the legal department for years and have had the benefit and privilege of the consultation and friendship of my friend, Dr. Outten. I know of what immense value it has been to me in the past, and I may say to you now, that there is nothing that could be offered to me as the head of my department which would tempt me for one moment to do away with the advantages which accrue to my department because of the surgical department. (Applause.)

Lastly, I want to repeat to you that it is a pleasure to have met each one of you, and it will be a greater pleasure to me still if you will remember me and when in St. Louis will come to see me and take me by the hand. I know you collectively now, and I want to know you individually. (Loud applause.)

PRESIDENT'S ADDRESS.*

By J. B. Murphy, M. D., of Chicago.

Mr. Chairman, members of the National Association of Railway Surgeons:—It is with much pleasure that I avail myself of this opportunity to express my high appreciation and sincere thanks for the great honor you have conferred upon me in selecting me to preside over this grand assembly of distinguished surgeons. It is my pleasant duty to express to the committee of arrangements, to the medical profession and to the citizens of this beautiful city, our grateful acknowledgment for the cordial reception extended us and to thank Dr. Starkloff for his warm words of welcome (I cannot say that they were entirely unexpected, for that would betray an ignorance of the proverbial hospitality and chivalry of the South).

It is not surprising that I enter upon the delicate duty of presiding over your deliberations with much diffidence; but, when I recall the past and remember the willing assistance you have always given your presiding officer, I take heart and venture to assume the responsibility, not altogether without the hope of discharging it in such a manner as to justify the confidence you have reposed in me. I am still further encouraged in this upon reflecting on

*Delivered at the Ninth Annual Meeting of the National Association of Railway Surgeons at St. Louis, April 30, 1896.

the truly scientific and tolerant spirit which has characterized your former meetings, the moderation and courtesy invariably observed, the entire absence of innuendo or sarcasm and the all-pervading harmony and good will—all of which I feel confident will be equally characteristic of the present one. I appeal to every member to participate in the discussion; to express his views honestly, unreservedly and as concisely as possible, that every subject may receive a free and impartial consideration.

To-day, gentlemen, we are assembled to inaugurate the ninth annual meeting of the National Association of Railway Surgeons, and does not the heart of every member of this association throb with pride when he observes the magnificent proportions which this organization has attained? From the small nucleus in Chicago, in 1887, there has developed one of the largest surgical bodies in the world—a society with a membership of twelve hundred. This, gentlemen, is not the result of accident nor of a fortuitous combination of circumstances, but is due to the yeoman service of the founders and builders of the organization, whose loyalty and fidelity of purpose have frequently been tried; but the wise counsel of my predecessors and their lieutenants has brought us safely to our present flourishing condition. There was a time when the scientific surgeons of the country looked askance at this organization, but, gentlemen, we challenge comparison in quality as well as the quantity of work accomplished at our meetings. Our efforts have revolutionized the medico-legal aspect of traumatic surgery, and systematized the treatment and care of the necessarily large number annually injured on our railways.

In the surgical literature of the day we have also taken an enviable position. The Railway Surgeon, under its present management, has attracted widespread attention. Its articles and editorials are perused with pleasure and profit by every member of the association. It is not the pedantic advertising sheet, so common in our time, but the erudite production of a master mind. In order to sustain the editor in his position and maintain the elevated standard which this journal has taken, we must furnish him with the results of our individual investigation, original research, careful analysis and reports of the cases coming under our observation. It is not requisite that each member should write a book—that he should become a dreamer—no; the most valuable contributions to surgical literature are concise, painstaking, detailed reports of cases treated, without the addition of a page or two of literary references.

Clinical medicine and clinical surgery, which form the practical part of our science and art, have always been, and must always be based on the clinical course of cases influenced for better or worse by the medical treatment, the surgical operation or the masterly inactivity with which the case is managed. Theories come and go, but clinical facts, accurately recorded, as well as the results obtained, must constitute the history of medicine of that period. You, gentlemen, are in duty bound, to contribute to the formation of this history, and your recorded cases will be perused, just as the records of this association's meeting will be handed down to medical posterity, to be examined, scrutinized and analyzed, and the essence of good therein utilized a century hence.

How different is the position of the railway surgeon to-day compared with that of ten or twenty years ago. At that time, his operating room was the roundhouse, the flag station, and not infrequently he had the canopy of heaven for a roof, and a pile of ties for a table. His dressings consisted of some waste and fragments of the wearing apparel of the victim. He did not have even the advantages afforded by water, unless it were from the polluted wayside pool. Observe him to-day; in almost every caboose, every station and at every junction he has a complete outfit—all that is necessary to perform aseptically or antiseptically any emergency operation. He secures his sterilized water from the boiler of the engine, and even though he were called upon to perform an operation on the prairie, with nothing but his pocket case, he has with him now his ever-present aseptic consciousness, which enables him to convert almost any material into an aseptic dressing appropriate for a wound.

He is fortunately not frequently called upon to tax his resources in this particular, as many of the railways have their own well-equipped hospitals at short intervals, or have affiliated themselves with hospitals in which their injured are cared for. This, gentlemen, is the result of your work, and your task is not complete until every railway in the land has its own hospital with its efficient hospital corps. You

must not infer from the foregoing that it is my belief that operations cannot be performed aseptically in other places than the hospital. On the contrary, I am confident that the surgeon who has had the proper training in asepsis can go into the poorest hovel and perform any emergency operation in a thoroughly aseptic manner, if he can but procure there heat and water. The marble-top table, the porcelain-lined operating room, the white gowns, will not assure asepsis, if the operator strokes his whiskers, wipes off the perspiration from his forehead, holds the scalpel or forceps between his teeth while not in active service, or invites the distinguished bystander to insert his infected digits into the wound for the purpose of examining the parts. How many of you, gentlemen, have seen an operator after having devoted twenty minutes or more to the preparation of his hands prior to an operation, take hold of a patient to retain him on the table in his struggles under the influence of the anæsthetic, and without any further preparation, proceed with the operation. You may smile and say, "Who would be guilty of such gross carelessness?" I will answer you by saying, "Who is not guilty of many smaller acts, wherein his hands are as liable, if not more so, to be contaminated, than in the manner above described, at some stage of an operation?"

Asepsis is secured only by the most diligent watchfulness and circumspection in regard to the hands, what they come in contact with and how they are disinfected before they again come in contact with the wound. Can this ideal asepsis be attained by the railway surgeon at the cross-roads? Yes, most assuredly it can, and it is a criminal negligence and an unpardonable indifference in his sense of obligation to his patient when he does not succeed in obtaining asepsis in every place and under every circumstance, in wounds produced by himself. The apology I have to offer for being so emphatic on these points, is, that my observations in post-graduate teaching have convinced me that a great majority of practitioners are lamentably deficient in these particulars. In my college examinations I have made it a point to give the student who could accurately describe the proper treatment and dressing for a scalp-wound more credit than the one who could give in detail a description of an extirpation of a kidney. There has been a growing tendency to sneer at the practice of antiseptics, but I hope, gentlemen, that you will not allow these comments to influence your actions in your practical work, and that you will bear in mind, that while in other fields of activity, cleanliness is next to godliness, in surgery, cleanliness is godliness itself.

I am pleased on looking over the programme to note that there is a number of papers devoted to the injuries of joints, but regret that there are none that treat of the management and care of joints in close proximity to fractures. Why this practical field has been overlooked I do not know; it certainly is not because it is of minor importance, either to the surgeon or to the patient. Is there a surgeon present who has not seen patients permanently crippled, incapacitated or compelled to undergo months of torture, to remedy the evil results to joints, situated either immediately above or below a fracture? We should ascertain the cause and remedy the evil, if possible. If you will recall to your mind the cases of acquired talipes, and remember the difficulties in treatment, the forcible flexion and extension, the tenotomy and the protracted massage which had to be carried on for months in order to obtain even a moderately useful limb, you must be forced to the conclusion that the treatment of the joint is of more importance than the treatment of the fracture. The causes of traumatic arthrosis are mainly two-fold, (1) the injury sustained in the joint by the force producing the fracture, (2) the prolonged immobilization following the primary traumatic synovitis. The latter has a tendency to lead to a plastic adhesive synovitis, peri-arthritis and peri-tendenitis. If the position of the joint be faulty while these pathologic processes are taking place, the resulting adhesions will retain the limb in its abnormal position. This may all be avoided, if even a little attention be paid to the joint during the process of repair, i. e., if the joint be subjected to passive exercise daily, after the sixth day, the limit of such exercise to be governed by the pain. It should never be carried to a degree to cause real pain, as this means additional traumatism, additional exudate, and additional danger of anchylosis, or very limited motion. The same result is obtained by the ambulatory treatment of fractures, so ardently advocated

by some surgeons at the present time, as for example Dr. A. C. Wiener of Chicago. It should be borne in mind that a limited degree of motion at the seat of fracture, rather hastens than retards the union, and lessens the liability to non-union. The old law which was so forcibly impressed upon our minds, as students, that the joint above and below the fracture should be constantly immobilized during the process of repair, must be effaced from our code, and a new one inserted, viz., that all joints in the neighborhood of a fracture must be passively exercised after the fifth or sixth day.

Another subject that I hope will receive attention at this meeting is, the importance of repose, prolonged, unconditional repose, to the patient sustaining cerebral and spinal concussions. The conspicuous place which spinal concussions have occupied for the last five years in medico-legal practice is in some degree, at least, due to the surgical management of the case immediately after the injury. True, it may not be the fault of the surgeon, for many of these patients do not consult a surgeon, and if they do, they are reluctant, and very often, even refuse to obey his order, to remain in bed for from four to six weeks. The pathology of the process of repair of physical derangements of the tissues of the brain and spinal cord teaches us that repair and regeneration in these are slower than in that of almost any other tissue in the body, and not only are they slower, but unless the process be complete, they are liable to produce recurrence of symptoms and initiate new changes. It is, therefore, our duty to insist that they be given ample opportunity for repair, and, as we are conscious that medicine contributes comparatively nothing to these changes, the resources of nature must be depended on exclusively, and the conditions must be rendered as favorable as possible.

The teachings of modern pathology and the glorious achievements in the new fields of surgery have carried us away from the daily routine of our labors. We are prone to overlook the little things that contribute to the relief of the sufferer, and the comfort of our patient. The same spirit prevails with the clinical; when he has made his diagnosis he considers that there his labor ends, forgetting that the primary and most essential aim of the diagnosis is to suggest means for the relief of the patient. For this reason, gentlemen, at this meeting, I trust we will descend from our revellings with the gasserian ganglion, from our ideas of direct inspection of the floor of the fourth ventricle, to the more matter-of-fact every-day topics, remembering that there are a hundred, yes, even a thousand of the commonplace cases that are indifferently, if not imperfectly treated, to the one requiring these wonderful acrobatic surgical feats.

Gentlemen, the time for this meeting is very limited, the programme very long, the number of papers which appear on it embrace a wide range of subjects. In order that we may have time for the consideration of every topic, I trust you will all be punctual in your attendance, present at every session and take a truly scientific interest in the discussions, always bearing in mind that this is not a mutual admiration society, and that our sole object is to arrive at the truth.

I thank you for your attention.

SURGERY OF THE SPINAL CORD AND COLUMN.

By T. H. Briggs, M. D., Battle Creek, Michigan.

The surgery of the spinal cord and column is brought prominently to the attention of the surgical world by a number of distinguished operators and authors of to-day, and the fact that this is an association of surgeons who are often brought in contact with injuries of the cord and column, either traumatic or otherwise, is my excuse for trespassing on your time to-day. Practically a more definite field is being opened in the primary and secondary treatment of spinal injuries. The surgical procedures in this field that were, in the near past, considered perilous in the extreme are to-day adopted as worthy of careful consideration and analysis. It has long been a tradition that following injury of the spinal cord atrophy was one of its necessary sequela, even though the cord was without maintained compression, and that pathological change supervened that could not be remedied by our art. Some of our eminent pathologists now question this position and claim that the paralyses following injuries of the cord are due to an inflammatory exudate producing and maintain-

ing compression of the cord in its bony canal, and that on the removal of this product the cord will resume its normal functions.

In 1887 Drs. Horsley and Gowers reported the removal of a number of spinal tumors, and as some may not have even the report, I will give a brief synopsis of the same. The first is the case of a man 42 years of age who had been suffering from a growth in the spinal canal for three years, and for the four months preceding its removal had been completely paralyzed in the lower extremities, and at the time of its removal paralysis extended to the base of the sixth dorsal nerve with spasms in the legs and feet, cystitis and retention of urine. The tumor was removed from the dorsal region. On removal of the arches and tumor the cord was found to have been compressed by the growth and an exudate. The wound healed by first intention, and there was complete recovery, the patient being enabled to walk and dance with ease. This was followed by the remarkable paper of McEwen reporting six cases of the removal of the arches of the vertebræ for various pathological reasons, consisting of tumors, injuries and caries of the column, causing compression of the cord and producing paralysis. All of the patients were relieved by operation, except the sixth, which was a case of traumatism treated by opening the spinal canal and elevating the arches, and if my understanding of it is right, not draining the canal, as should have been done. A majority of these patients recovered and returned to their various occupations.

Since 1887 some thirty cases have been reported of surgical treatment of the spinal cord and column, the large majority of them having been relieved by operation. Mr. Horsley has analyzed the reports of fifty-seven fatal cases of tumor of the cord, and has shown that eighty per cent. of them would have recovered had the proper surgical treatment been rendered. This is a sad reproach to the surgery of this age. The spinal cord is a segmental organ with a fixed series of nerve centers protected by a bony canal. Therefore, whatever produces compression, be it from injury or growth, the results are the same, and are to be remedied only by operative procedure. A partially separated cord should be aseptically sutured through its enveloping membranes and the sutures passed beyond the point of separation through its covering and the raw surfaces placed in perfect contact.

In looking over the surgical history of the late war I find that all cases of this class of injuries were fatal and the treatment in the great majority was nil, presumably largely from the fact that the proper agencies were not at the command of the surgeons for their treatment at that time. Since that day a systematized care and procedure in this class of cases has been established. I wish to call your attention to one case of a number that have come under my care.

W. J. M., Canadian by birth, aged 27 years, a man of strong muscular development, on July 21, 1894, was injured near Hunt's Mills., Minn., by having a team, drawing a binder, run away with him, the binder passing over him, injurng the spinal cord and column. He was taken to St. Luke's Hospital at Grand Forks, Dakota, on the following day and there remained until the 27th day of November, 1894. I have been unable to get any report as to his condition when he entered the hospital at Grand Forks, but from his statement and condition when he entered the Memorial Hospital at Battle Creek, Mich., on the 28th day of December, 1894, I found that the spinous processes had been removed at the time of the accident from the third and fourth lumbar vertebræ. The wound had healed, but he was still suffering from incontinence of urine and fæces, was unable to move his legs or the lower part of his body, and this inability had gradually grown upon him since the time of his injury. In the region of the fourth, fifth and sixth dorsal vertebræ there existed an inflammatory and fixed condition of the column, with swelling and tenderness. I removed the arches of the three vertebræ mentioned and found the vertebral canal filled with inflammatory product about one inch each side of a small round stone about the size of a large grain of wheat which was resting against the cord, compressing the same, having been driven therein at the time of his injury. I removed the arches and the exudate, drained the canal, dressed with gauze and maintained drainage for two months, when the wound healed by granulation, not one drop of pus having been developed. On closure of the wound the patient was allowed to move on crutches with a proper spinal support. The

bladder and bowels resumed their normal functions between two and three weeks after the operation, and he is at this date able to move about without crutches and perform light manual labor. It must not be inferred that complete recovery cannot take place after extensive injuries of the cord and column. They should receive the same careful surgical care that we give to all regional surgery. The source of irritation should always be sought for by removal of the vertebral arches if we are unable to do it otherwise. When the arches have been comminuted and no compression exists at the time, they should be removed, as this procedure protects the cord from subsequent inflammatory compression. All compression of the cord from deformities should be corrected by removal of the arches. When paralysis immediately follows injury we should remove the arches over the seat of the injury. To recapitulate: All traumatic injuries of the spinal cord or column should be subjected to immediate surgical research and repair; the cord should always be given a free canal and free drainage.

In all cases of the removal of the arches or fragments of the bodies of the vertebra, compression may take place by doubling of the cord unless extension be maintained by a proper brace until the bony structures are able to support themselves. This one that I exhibit is well adapted for the purpose. Deformities can be relieved by the surgeon and position maintained by a proper brace adjustment. There should be that exact nicety of the adjustment of the brace that the patient can be moved in various normal positions of the body without pain or displacement. I believe the surgery of the spinal cord and column has been too conservative, but in the near future it will receive the consideration and investigation at the hands of our surgeons that its importance demands. A brace to support the column in a natural position should be perfectly adjustable, as no two columns are balanced in the same exact lines. No operation for removal of the spinal arches or portions of the bodies of vertebra should be considered complete until the careful adjustment has been made of the spinal support. However desperate one may presume to consider an injury, the patient is entitled to an exhaustive examination and research at our hands that we may have a full understanding of the case, removing the arches of the column if necessary to gain such information that we may give him the benefit of the advanced surgical treatment and care in such injuries.

All fixation of the spinal column should be posteriorily, excepting at the points of the shoulders, anteriorly, with no cast or bandage passing around the body. The spinal canal can and must be drained after operations in which it is opened.

DISCUSSION OF DR. BRIGGS' PAPER.

Dr. A. I. Bouffleur, Chicago: There are one or two points I would like to call attention to in regard to this paper, and upon which I must differ with Dr. Briggs. The first is in regard to drainage. I think that free drainage of the spinal canal is entirely too dangerous unless there is some special indication for it, such as suppurative condition. The great danger attending these special operations is that of infection, which kills virtually nine-tenths of our patients. A patient therefore, who is subjected to free drainage of the spinal canal, is in imminent danger. It is true, there are cases in which free drainage is resorted to, and yet there may be no infection, but it is the exception. The rule should be to drain the spinal canal only when there is suppuration.

With reference to postponing operation until the surgeon is able to fit an apparatus to the back; I should take strong exception to that, because I look upon it as being entirely immaterial under these conditions. If you are going to operate, do so, and the sooner it is done, the better. It seems to me also that these apparatuses are entirely unnecessary. A plain plaster of paris cast will accomplish more than any flexible apparatus. On the other hand, if operation is to be deferred two or three weeks, and we do a secondary operation, then we can take time in operating to properly adjust the apparatus. The application of a flexible dressing to the spinal column would not meet with my approval. I base this statement upon my own experience, which is not quite as extensive as that of some of the other gentlemen present, but I have had six or seven cases in which I have found no difficulty whatever in applying a plaster of paris cast, and I should not feel safe if I should apply

a flexible apparatus after having removed some arches of the vertebræ. The parts should be fixed and held in proper position, and to do that nothing is too strong or too stationary. Therefore, I should not care to use a splint.

Dr. W. S. Hoy, Wellston, O.: I am certainly greatly delighted to have heard the most excellent paper of Dr. Briggs, upon "Surgical Treatment of Injuries of the Spinal Cord and Column." I am confident the discussion will be replete with scientific knowledge and profit. We have already heard a diversity of opinions regarding this class of injuries and their treatment. I hope the gentlemen who have preceded me, and those who will follow in this important discussion, speak from actual observation, and not from some theoretical, pet idea. I know of no subject so broad in extent, so unlimited in the considerations which it embraces, and so important to the interests of humanity, as the surgical treatment of injuries of the spine and spinal cord. We must of necessity, gentlemen, give these injuries a distinct classification, and I see no means of lessening the number of distinct classes below eight.

We recognize from such authority as Thorburn, unilateral dislocation, bilateral dislocation without recoil of the displaced bone, bilateral dislocation with recoil of the displaced bone, fracture without recoil, fracture with recoil, injury of lamina or processes and compound fractures. Secondary lesions, hemorrhage and meningitis. We readily recognize that fracture-dislocation and dislocation, are not always difficult of reduction, but do we have the chances of the cord's recovery greatly augmented thereby? I say without the least hesitancy, that my clinical experience in a number of these cases has led me to the conclusion that, a cord once crushed never makes a satisfactory recovery. Therefore, we are at once confronted with the question of laminectomy. When should we perform the operation, and what results of a beneficial character should we anticipate?

I wish to lay down this one rule: The sooner surgeons learn that a laminectomy, to be successful should always be performed immediately after a spinal injury in cases with positive evidences of pressure, the better for our patients and the more honorable for our profession. I am thoroughly convinced, however, that in the vast majority of these spinal injuries, the operative interference will be of a useless nature, simply from the fact that when an injury is of sufficient force to fracture the spine, the cord is so disorganized in a short time, that restoration does not and cannot take place. We are therefore confronted with the fact that when the continuity of tissue in the cord is once interrupted, we need hope for no restoration to supervene.

I have no doubt a few surgeons have witnessed in laminectomy, a want upon the part of the operator of a thorough knowledge of the nature of the accident, calling for the operation. We must in this class of cases be governed by the same general laws that would guide us in any capital operation. We are fully cognizant that acute pressure whether by bone or blood clot must of necessity result in rapid anatomical destruction of the cord, and while our operative results may not be as brilliant in this field of surgery as we would desire, still, if we operate at all, we should, yes, let me say must, do so at a time that will prove the most beneficial to our patient, and that time, gentlemen, is as soon as possible after the inception of the injury. I have heard very little said regarding severe shock in this class of cases; it amounts to very little and soon passes away, and it is the early operator relieving the compression and irritiation of the cord that stands the best show of relieving a most persistent case of shock. Owing to its cheapness and convenience of application the plaster of Paris jacket has, no doubt, relieved many thousand sufferers who would otherwise have been left to their fate.

I am quite sure the jacket acts as an anterio-posterior support, but the moment it becomes loose, its entire leverage power is lost. We cannot adjust the plaster with the precision obtained by a steel apparatus. We find the strongest advocates of the plaster of paris jacket among surgeons who have had little or no experience with braces.

The subject of injuries to the spine is too serious and important a subject to pass by lightly. I do not know what the experience of the majority of the surgeons present has been in regard to injuries of the spine and operations for them, but it has been my mis-

fortune, within the last eighteen months, to have had four cases in which I performed the operation of laminectomy, and I shall study my case a long time before I shall cut down on another spine, anticipating any marked beneficial results. Where you have traumatism, or a fracture of the bony structure, you will find a disorganized condition of the cord, and in such cases I can see no benefit to be derived from the application of a plaster of Paris dressing, excepting after an operation has been performed and the bony structure and pressure have been relieved. I have now three cases that are alive to testify regarding this operation. They have experienced very little relief, and you will find that this is usually the result in operations for the relief of injuries to the spine. I live in a neighborhood where there are forty-five hundred men who work underground. Every now and then some of the men are injured by the falling of slate and things of that kind, and among the injuries received are a good many spinal injuries. These men bend over in a stooping position and when the slate falls on them they go down on their haunches, and usually when there is a fracture we have a dislocation accompanying it. It seems to me there can hardly be a dislocation of the spine itself, without a fracture; in short, I do not believe an injury can be so great as to produce a dislocation without fracture.

I do not wish to consume any more of the time of the association, as there are others who doubtless have something to say upon this subject. However, I desire to say this, that out of the five cases, three of whom are living, they have received no benefit from the operation practically. There was, however, a return of sensibility following the operation, but not of motion.

Dr. W. B. Outten, of St. Louis: This subject has always been an intensely interesting one to me, simply for the reason that I know of no cases in all surgery where a feeling man realizes so completely that we are utterly unable to accomplish good results as in injuries of the spine, particularly fractures. My conception of these cases is that they have to be interpreted upon a purely scientific basis. There is no doubt but that we may have varying degrees of spinal injury, and right here is a point where we often find it absolutely necessary to call to our aid neurological science, and even with all of the assistance we get from the neurologist we find conditions that we cannot interpret. Let us take a case, for instance, of fracture of the twelfth dorsal vertebra. In such a case a series of nervous phenomena would invariably be manifested, in which we have a dividing line between increased traumatism from the varying degrees of absolute concussive force to absolute transverse spinal injury. When you get beyond that point of the twelfth dorsal vertebra, you come in contact with a condition which, marvelous as it may seem, is just as efficient as though you had a fracture of the spinal column, or as though a segment of the column was broken into a thousand pieces. Take, for instance, the first two or three dorsal vertebræ up to the cervical region, you have a positive condition which has been clearly demonstrated by Thorburn—a condition of recoil, in which the vertebræ are forced upon the medullary mass and crush it transversly as though it were crushed by a hammer, when it will spring into position again, leaving no effect except a pathological condition of the spinal cord. You may try to determine exactly as to whether you have a dislocation or sublaxation, if I may use that term. In cases of this kind we have got to seek the greatest diagnostic skill which neurology can afford.

As regards performing the operation of laminectomy, it is a serious operative procedure, and before performing it in certain cases I have repeatedly pondered over the question as to whether the patient would be materially benefited by it. I have opened the theca, have come in contact with an unusual exudation of cerebro-spinal fluid in some cases, while in others I have found none. In doing this operation we have to proceed step by step; we have to know the series and sets of nerves that are involved. Under certain conditions, the spinal cord may be partially lacerated or so involved that the operation of laminectomy is forced upon us. Picture to yourselves a man with a transverse lesion of the spinal cord. He lies on a bed and day by day you find the paralysis extending; there is disorganization of the tissues; you find every element of misery. Now, I maintain, that so far as this operation is concerned, in cases of absolute fracture, it is the surgeon's duty to

perform it at once, and not wait an hour. If the surgeon is certain that this condition of the spine exists, he should not wait to apply a mechanical appliance, but should cut down and find out the actual condition.

The history of laminectomy is, that it is a procedure which has been followed in a great many cases by absolute failure, so far as the permanent results are concerned. It is true that relief in some cases is temporarily afforded, but not in all.

With reference to drainage of the spinal canal, I would hesitate before resorting to it, because I am convinced that there are conditions in which, by the application of any aseptic dressing, we are utterly unable to prevent the occurrence of septic trouble. In injuries of the spinal column where we have a partial dislocation—a sub-dislocation, if I may be permitted to style it—we rarely have any difficulty, and in all of the cases I have treated a well adapted plaster of Paris bandage, as advised by Sayre, has met the indication. I can show you case after case where there is some rigidity of the spinal column where the injury occurred, yet the patients are able to perform all of the functions of activity, minus those which require excessive bending of the spinal column.

Dr. Hoy said that he did not believe a dislocation would occur without fracture. I am convinced that it can occur without fracture. If I have interpreted the conditions rightly, I have had at least two such cases.

Finally, of all the grave surgical cases I have come in contact with in my practice, which require acute sense, good judgment, and an active, rapid and proper interpretation of the existing conditions, I have met with none that have perplexed me so much as those unfortunate accidents which occur in connection with the spinal column.

Dr. J. A. Barr: Just a word in reference to the instrument or brace shown. I agree with the reader of the paper in devising and advising an instrument by which we can relieve the pressure on the spinal cord. I have a man under my care at the present time who was injured last December by jumping off a moving train. There is an area of about three inches in the lumbar region which is sensitive and of which he complains. There is no swelling, no dislocation, in fact nothing to show that there was any injury except that there is soreness in the region referred to. This case showed evidences of paralysis of the lower extremities and of pain running over the top of the head and into the eyes, etc. It went on in the usual way until there was an improvement in the weather, when the spinal cord also showed slight improvement and signs of the patient's recovery. When the man got out of the house into the open air, and breathed God's oxygen, he seemed to improve a little. When he undertook to use crutches for the first time, he could not do so. When the crutches were placed under his arm and he attempted to straighten his back, it caused such intense pain that he could not use them. He meandered around outside of the house as far as he dared to go, for a short time. I then procured a shoulder-brace from an instrument maker and applied it with the idea that some slight appliance to the spine would overcome the pain incidental to the stretching of the body. This afforded some relief, and I think a light instrument such as we have seen to-day will meet the indications in these cases of spinal trouble. A plaster of Paris cast, as we all know, is one of the finest things that we have, but it is weighty, as a rule, and if we could get something that is light and apply it so as to give us the necessary motion without allowing the body too much freedom and hurting the parts, we will have arrived at something that will be of value to us in the treatment of these cases.

Dr. Jabez N. Jackson, of Kansas City: I desire to call attention to one point with reference to the use of a brace or a plaster of Paris cast, in the treatment of spinal troubles. I do not think any brace has ever been devised thus far which will meet the indications like a plaster of Paris cast, in the primary fixation of the spine. A brace, such as the one that has been exhibited, may serve very well to prevent flexion or antero-posterior motion of the spinal column, but I do not see how it can prevent rotary motion of the spine. There is but one thing that will bring about complete fixation of the trunk, and that is the use of a plaster cast. If the doctor's device has any place in surgery, it will be in the later stages, after the reparative process has taken place, having for its object the partial strengthening of the spine while the patient is able to get

around. In the later stages of treatment of spinal troubles this brace may be of some benefit, but I do not think it can be used with benefit in the primary treatment.

Dr. J. B. Murphy, of Chicago: I think we can explain the disparity between the comments of Dr. Hoy and Dr. Outten as regards the beneficial effect of operation, if we will consider for a few moments the pathology and the degree of the injury referred to by Dr. Outten. We know from experiments that where we have a complete division of the cord above the point mentioned by Dr. Outten, there is no particular barrier to the production of motion. We do know, however, in further analyzing these cases, that where we have a fracture which produces a complete division of the cord we have nothing to hope for from the operation of laminectomy; but unfortunately we are not able primarily to tell whether the paralysis that is being produced after the injury is due to a complete division, to a concussion, to a hemorrhage, or to continued pressure of the deformed spine without a division of the cord. If we could tell the difference, then we could say in one class of cases we will operate, where the cord is not divided, and on the other hand, we will not operate. Furthermore, the paralysis in the case of the man from Dakota, mentioned by Dr. Briggs in his paper, is typical of the class of cases reported by Victor Horsley at the last meeting of the British Medical Association, that recover after a secondary operation. It must be borne in mind that these cases gradually get worse. The paralysis is not complete at the time of the injury. The paralysis is due to an inflammatory exudate within or without the cord, producing compression on the cord at the seat of injury. This is exactly the same as the paralysis which we have as a result of triangular deformity in tuberculosis. It is not due to compression by bone at the site of the deformity, but to an abscess formed within the canal and compression by that abscess. This abscess can be opened and drained on the side of the cord without interfering with the meninges of the cord and it will relieve the compression.

Dr. Briggs (closing): There seems to be a misunderstanding in regard to the statements I made in my paper. I said no operation should be considered as complete upon the spinal column until the cord had been properly supported. I did not say that you must wait until the fragments are raised. These things we all consider imperative. I believe any appliance that will support the spinal column posteriorly is far more acceptable and useful than one which passes around the body.

The Cryptoscope.

Our special correspondent in Rome writes: At a meeting of the Perugia Medico-Chirurgical Society held on February 5, Professor Salvioni, teacher of physics at the university, made a most important communication on the new results obtained by him in Roentgen's rays. In studying the question his aim was to invent an apparatus which would enable one to see direct and without the intervention of photography certain bodies inclosed in wood, flesh, cardboard, etc. He therefore studied the possibility of rendering the retina sensitive to Roentgen's rays. In this he has succeeded by inventing an apparatus which he has called a cryptoscope, which he exhibited at the meeting, and by means of which one can clearly see the contours of the bones of one's own hand, objects inclosed in cardboard boxes, leather purses, etc. This apparatus is very simple, and consists of a black cardboard tube inclosed at one end with a disc of black cardboard coated internally with a fluorescent substance (barium platino-cyanide, sulphate of calcium, etc.); in the other end is placed a lens which permits one to clearly see the fluorescent surface. The object to be observed is placed before the luminous source given by a Crookes tube, and then one looks at it through the cryptoscope placed at a suitable distance. As in the fluorescent cardboard the parts of the object impermeable to Roentgen's rays are drawn in shadow, thus one clearly sees the contours of the bones of the hand, etc. A model of the instrument was made under the direction of Professor Blasema at the physical cabinet of the Roman University on February 11, and with it one could clearly see the bones of one's own hand, coins in a purse or the clenched hand, etc. It is evident from these results that the apparatus, when perfected, will be of great use in medicine and surgery. —British Medical Journal.

The tendency to ultraism which influences public opinion in great social questions * * * has been also prevalent in the affairs of practical medicine.—Dr. J. Bigelow.

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Address all communications intended for the business department to THE RAILWAY SURGEON, *Monadnock Block, Chicago.*

ACCIDENT NEUROSES.

A most able and admirable editorial recently appeared in the Boston Medical and Surgical Journal, drawing attention to the sociological problems involved in the immediate and ultimate effect of traumatic or psychic shock on the nervous system. It speaks of the moral effect upon the community, particularly upon the working classes, of the more or less indiscriminate bestowal of damages for real and fancied injury, and the writer gives the views of a sociologist of distinction, who says that he regards the attitude of mind influenced by the general bestowal of damages in Germany and England as a most ominous and threatening problem. He calls the attention of physicians at large to the necessity of their having in these cases, when called upon to treat them, as clear an idea as possible of the subtlety of the problem and to realize fully the wide bearings of their expert decisions, averring that there is no doubt that many of the symptoms following accident are psychical, however they may be physically manifested. That a chance of money redress produces an inevitable tendency, inherent in human nature, "to exaggerate and, through more or less voluntary autosuggestion, to construct an organized complex of symptoms which might have sunk into the background of consciousness and disappeared." Trauma has come, in the popular mind, to be identified with "accident;" a "traumatic neurosis" means an "accident neurosis." Experience will no doubt show that the term "traumatic neurosis" should be used with more and more caution and never as indicating a special disease. No doubt, both practically and scientifically, we would do as well to speak of "accident hypochondria," "accident neurasthenia" and "accident hysteria," since it is evident that not every trauma is due to an accident. Our author further shows that "so-called objective symptoms are in reality subjective and that their diagnostic worth lies in the fact that their presence points more or less distinctly to the absence of organic disease."

For years we have maintained that there is no sharply defined type of disease which could be called traumatic neurosis. We believe that many cases are dependent entirely upon the force and conditions which are created. We quote from an article by the editor of The Railway Surgeon, in "Withrow and Becker's Medical Jurisprudence:" "While realizing that, owing to the by-play of extraordinary circumstances, trivial injuries, particularly with back symptoms, can readily shape themselves into neuroses, yet we believe that racial differences, perfection of physical condition and the multiplex force of surroundings are constantly modifying factors. We also believe that favorable surroundings and the influence of an unprejudiced and thoroughly impartial medical attendant will be productive of the exact condition of trauma as it exists."

And if trauma produces a condition similar to hypnosis, as in traumatic hysteria, we cannot help believing that the existing force and predetermined mental condition of the medical attendant will oftentimes change trivial conditions into serious ones. It seems rather startling that the physician, by virtue of mental superiority, prejudice and suggestion, could create an essentially serious condition, but we candidly believe that it is possible in a weakened and receptive mind to suggest and develop consequences of a very serious nature. And if, as claimed by authority, such cases have been cured by hypnosis, it certainly seems natural that hypnotic suggestion would have

equal effect in their causation when the conditions are favorable to it. There cannot be any doubt that accident traumatized minds, if we may so use the expression, absorb sensations not only directly from the effects of the injury, but also receive impressions produced by the suggestions of an already convinced mind, as exemplified in the description of cases given. Any case treated by Oppenheim, where the mind was in an hypnotic condition, certainly would partake of the character of Oppenheim's suggestion. We cannot believe that there is a typical complex of symptoms in every case possessing anything like uniformity, but the local trauma aids to develop the neurosis dependent upon predisposing central disturbances and peculiarities. But where we have physical perfection and mental strength trauma is very rarely likely to produce the psychic condition claimed to be peculiar to traumatic neurosis, for we find that where intelligence is blunted and where surroundings have made incidental elements of danger familiar, physical injuries are manifested as physical injuries only, and very rarely terminate in psychic troubles unless there exist extremes in intensity and a predisposition upon the part of the individual, either racial, inherited or acquired. Again the contributing elements of modern civilized life in generating psychic conditions are of undoubted force and effect, and when these conditions are added to injuries inflicted by corporations of responsible character, accident neuroses are of constant occurrence. These corporations are made the great prime cause when other contributing elements are infinitely more forceful.

It is a well established fact that there is an enormous increase in hysteria under the peculiar influences of modern life. The excessive use of narcotics and stimulants, with little exercise, high living, the eating and consequent absorption of organic poison in tainted foods all tend in the direction of hysteria. Overwork and consequent fatigue are powerful causes. But mental conditions engendered by the use of narcotics, stimulants and improper food, overwork and fatigue count as naught in the production of accident neuroses, while the ability to pay of the inflicting party is the all-powerful disease-producing factor. Contributing elements are inoperative, and injustice is made potent and effective. Who can disentangle our idea of the cause from the effect by which many know it? In the interpretation of this modern social enigma the effect is made the substance, while the cause is ignored. All causes have power to produce effects, but in accident neuroses, we have heretofore perceived the event, change or phenomenon, and ignored the cause.

The general idea of cause is that without which another thing called effect cannot be; hence, in accident neuroses, while every trauma is not the result of an accident, the accidents from cyclones are not as frequently followed by accident neuroses as are railway accidents, and simply for the reason that the surrounding conditions are oftentimes far more potent than the accident, and are justly the cause. But the brain of man is the organ which receives and manufactures suggestions, and these suggestions seem to shape themselves eternally to the wants of the individual possessing the brain.

"In judgment of her substance thus they vary,
And vary thus in judgment of her seat;
For some her chair up to the brain do carry,
Some sink it down into the stomach's heat."

—Davies.

SOME PSYCHIC CONDITIONS IMMEDIATELY FOLLOWING A CYCLONE.

It may not be uninteresting to give our readers the impressions of the editor concerning the effects in a psychic way on some persons who passed through the St. Louis cyclone of May 27, 1896.

An endeavor was made to study the general mental effect, facial expression, psychic anomalies and various subjective manifestations.

Psychic shock or trauma under the influence of a cyclone seems almost the same as psychic shock from any other source, where sheer intensity of circumstance makes it productive of all the degrees of this passion as expressed by the words fear, dread, terror and consternation. Some moodily told how they had passed through a more or less brief period of unconsciousness. "I did not know what had happened or where I was for some time afterward," was a common observation. The psychic condition was one of general obliquity to external impressions in which many voluntary acts were performed almost automatically; the higher mental faculties alone being in

abeyance. Here strode a woman up the street immediately after the cyclone had ceased with her dress and underclothing high up around her waist, oblivious to surroundings with fixed look staring straight ahead, carrying beneath her arms a flower pot and in it a ruined plant. Another woman followed almost in a nude condition, carrying a bird cage minus its occupant. They acted as in a dream, thoroughly dazed and having the vacant stare of the hypnotic.

Person after person aimlessly wandered, unconscious of their surroundings or of the calamity which had occurred. One person informed me that he had wandered for four hours in this condition, utterly oblivious of what had occurred or where he was located; that he was so dazed that he lost his way home many times and at times found that he was talking at an excited rate; also that when he arrived home there was an almost irresistible impulse to still aimlessly wander. On the faces of many could be noticed a blank, yet pinched expression, an inattentive, blunted mentality, a seeming inability to concentrate attention or to think. While in others an increased impressionability arose, making them refrain from conversation and, as some expressed it, "Oh, I want to be alone; entirely alone." The change in voice was very noticeable; some talked with cyclonic explosiveness, while others had a halting speech, and again others a whispered utterance. In many claiming to be unaffected by the cyclone there was seen the hysterical involuntary symmetry of movement so frequently characteristic of this disease. Some would detail stories, showing plainly that peculiar excitability present in hysteria, where energetic movements were necessary to prevent irritating mental effects. Between psychic trauma producing many hysterical conditions of more or less severity, an unconsciously produced fatigue added bountifully to hysterical manifestations.

Many persons spoke of the inordinate oppression of the silence which followed immediately after the terrific and almost stupifying roar of the cyclone. The influence of this silence seemed to add an intense impressionability in many persons, creating an additional element of hysterical cause. Said an intelligent gentleman: "I never knew the horror of an after cyclonic silence before; it is indescribable. I remember once to have heard the following in relation to silence. Two adventurous and money-making men once fenced off the entrance to the Yosemite Valley in order to cheaply raise stock in the valley. A man was employed to take care of this stock and lived in a ranch house on the mountain side near by. This man spoke of the extreme oppressiveness of the silence by which he was surrounded. As night approached he would cook his supper and then go out and call in loud stentorian tones: 'Hello, someone, here is a good supper; come and eat it with me.' He would thus go and call in different directions; no one answering, he would irreverently grumble and become so mad that frequently he would leave the meal untouched. One day he appeared before his employers, some fifty miles distant, with as blank a looking face as was ever seen on a human being; his eyes protruded and glared, he had a begrimed countenance, he was hatless and almost without clothing. He told in slow and uncertain tones how in the early part of the night while reading he was suddenly aroused by the most awful and horrible noise as though the mountains were falling and the earth breaking in twain. Without hat or even looking back he started and ran and walked all night and all the next day, only intent on leaving behind him the cause of his terror. It was found upon investigation that the cause of his alarm was that a portion of the 'El Capitan' mountain at the entrance of Yosemite Valley, had fallen, undoubtedly producing a hideous enough noise to frighten anyone. This man averred that millions would not tempt him to undergo again this killing silence nor receive the shock which the falling mountain gave him. I now can well conceive of the demoralizing effects of excessive noise, followed by oppressive and overpowering silence. I certainly would at one time have given worlds to leave that ponderous silence."

The immediate effects of the cyclone can now be seen in many cases, but its ultimate effects are as yet an unknown quantity. We candidly believe that the full effects are not yet manifest. Psychic shock, trauma, exposure and fatigue will be productive of many cases of well defined hysteria and neurasthenia. The permanency of their effects can only be determined by time.

Notes of Societies.

National Association of Railway Surgeons.

Official report of the proceedings of the Ninth Annual Meeting, held in St. Louis, Mo., April 29, 30 and May 1, 1896.

APRIL 29—FIRST DAY, MORNING SESSION.

The association met in the Pickwick Theater, and was called to order by the chairman of the committee of arrangements, Dr. W. B. Outten, at 10:35 a. m. Dr. Outten made a brief report on behalf of the committee.

He then introduced Dr. M. C. Starkloff, health commissioner of St. Louis, who delivered the address of welcome, published elsewhere in this issue, which was responded to by Dr. F. J. Lutz of St. Louis, as follows:

Dr. M. C. Starkloff: Sir, I return to you in the name of the National Association of Railway Surgeons, thanks for the expressions of welcome which you have just voiced. I feel confident that the profession and the people of this fair city will redeem every pledge which you have made for them. The great city of St. Louis is no stranger to this association, nor do its members feel that they have come as strangers.

The rapidly progressing age in which we are so fortunate as to live is typified by nothing more perfectly than by the railroad, and no unimportant factor in the management of the "iron horse" is he who is represented by membership in this association. The wisdom which prompts precaution against accident has not been unmindful of the necessity for providing means and methods for the correction of injury, the alleviation of suffering and the protection of the health of the traveling public, as well as of those engaged in the perilous vocation of railroading.

In order to carry out more successfully the duty assigned to us as co-laborers in the advancement of modern means of travel, we make these annual pilgrimages. We endeavor to exchange experiences, to learn from our fellow surgeons, to observe the work of those conspicuous in the various departments of surgery, and to take with us into the field of our individual labors what may be conducive to the advancement of our profession.

The encouragement which we receive from you, the representatives of this great metropolis, cannot fail to incite us to still greater efforts, and I again thank you in the name of this association for your words of welcome.

Dr. Outten then presented the president of the association, Dr. J. B. Murphy of Chicago, who delivered the presidential address, published elsewhere in this issue.

The treasurer, Dr. E. R. Lewis of Kansas City, read his report, which, on motion of Dr. Brock, was referred to an auditing committee.

REPORT OF THE TREASURER.

To the members of the National Association of Railway Surgeons:

Gentlemen: It is with pleasure I am enabled to state that during the past year all old bills as well as new have been paid to date, and we open this meeting free from debt, and with an active working membership of nearly 1,200, every one of whom is imbued with the benign character of our work. Already many members who could not attend this meeting have, by mail, paid their dues for the coming year. No effort has been put forth to recruit our association, although I feel that in the future such effort should be made, for we are to-day building upon a rock, engraving our work upon its face, where time itself cannot eradicate it.

Our membership continues to represent not alone the United States, but Canada and Old Mexico. Illinois leads with 116 members, Iowa second with 106 members, Missouri third with 97 members, Kansas fourth with 86 members, Pennsylvania fifth with 84 members.

We have received during the year $5,580, and have paid the Railway Age and Northwestern Railroader $3,348, for new members registering during the year. We also paid the old debt we owed the Railway Age and Northwestern Railroader, which was amicably compromised, the association holding a clear receipt for the same on the old account. We have also settled an old bill with one of our members, who was generous enough to share liberally this expense with the association. It will be seen that we have been enabled to clear up these old debts, and leave the association free from debt, with enough money to close up the accounts of the present year.

Twenty members had registered for the coming year before I left home, and everything bids fair to make the coming year the most

satisfactory since the organization of the association.

The auditing committee will find vouchers for every dollar expended during the past year, and I shall be pleased to turn the books over to that committee as early as possible for them to audit same.

E. R. LEWIS,
Treasurer.

The secretary, Dr. D. Emmett Welsh, then read his report as follows, and on motion it was adopted:

SECRETARY'S REPORT.

The secretary begs leave to report the following: Number of letters sent out from this office, 1,341; number of vouchers drawn as per order of the chairman of the executive committee, thirty-two, viz.:

Voucher No.		
146.	June 5, '95, for A. J. Mullen, Chr. Ex. Com	$ 58.89
147.	June 5, '95, for E. R. Lewis, Treas	41.68
148.	June 5, '95, for Union Printing Co., Kansas City	5.00
149.	June 5, '95, for Union Bank Note Co., Kansas City	10.00
150.	June 5, '95, for Union Bank Note Co., Kansas City	22.50
151.	June 5, '95, for "Railway Surgeon," Chicago	40.51
152.	June 5, '95, for W. B. Outten, St. Louis	31.74
153.	June 29, '95, for S. S. Thorn, Toledo, Ohio	10.95
154.	July 1, '95, for D. E. Welsh, cancelled	.....
155.	July 1, '95, for D. E. Welsh, Sec'y	25.00
156.	June 25, '95, for D. E. Welsh, Sec'y	35.93
157.	July 3, '95, for Union Bank Note Co	90.35
158.	July 11, '95, for E. R. Lewis, Treas	5.40
159.	Aug. 7, '95, for Union Bank Note Co	8.95
160.	Aug. 7, '95, for D. E. Welsh, Sec'y	25.00
161.	Sept. 5, '95, for D. E. Welsh, Sec'y	25.00
162.	Sept. 6, '95, for A. J. Mullen, Chr. Ex. Com	24.05
163.	Sept. 6, '95, for E. R. Lewis, Treas	125.00
164.	Oct. 8, '95, for D. E. Welsh	25.00
165.	Oct. 8, '95, for Union Bank Note Co	2.50
166.	Nov. 4, '95, for "Railway Surgeon," Chicago	36.49
167.	Nov. 4, '95, for D. E. Welsh	25.00
168.	Nov. 4, '95, for S. S. Thorn, Toledo, Ohio	3.00
169.	Nov. 7, '95, for E. R. Lewis, Treas	21.65
170.	Dec. 4, '95, for D. E. Welsh, Sec'y	25.00
171.	Dec. 11, '95, for E. R. Lewis, Treas	125.00
172.	Dec. 11, '95, for A. J. Mullen, Chr. Ex. Com	59.19
173.	Jan. 15, '96, for D. E. Welsh, Sec'y	25.00
174.	Feb. 8, '96, for D. E. Welsh, Sec'y	25.00
175.	Feb. 29, '96, for D. E. Welsh, Sec'y	25.00
176.	March 7, '96, for Union Bank Note Co	2.50
177.	March 7, '96, for E. R. Lewis, Treas	126.30
178.	April 9, '96, for D. E. Welsh, Sec'y	25.00
	Total	$1,137.58

The secretary thanks the officers for their hearty co-operation with him during the past year in his endeavor to discharge promptly the duties of his office.

On motion the association adjourned until 2 p. m.

FIRST DAY—AFTERNOON SESSION.

The association re-assembled at 2 p. m. and was called to order by the president.

Dr. Outten stated that he had received an invitation from the Anheuser Busch Company, inviting the association to visit their brewing establishment, and that arrangements had been made to make this visit at 5 o'clock.

The president called for the report of the committee on publication.

Dr. Outten recommended, on behalf of the committee, that the arrangement for the publication of the Railway Surgeon be continued for another year with the present publishers, unless there was some objection on the part of the members.

On motion, the report of the committee was accepted.

The report of the executive committee was next in order, and was read by the temporary chairman, Dr. J. A. Barr, as follows:

REPORT OF THE EXECUTIVE COMMITTEE.

Gentlemen: Owing to the illness of Dr. Mullen, the chairman of this committee, we are unable to make a complete report.

Those parts of President Thorn's address, which were referred to the executive committee, have received our careful consideration, and we desire to make the following report relative thereto:

1. In reference to the incorporation of this association, we are unanimous in the belief that such a step should be taken and recommend that the executive committee be authorized to perfect a legal organization.

2. In reference to the creation of a committee, which shall formulate all legislation, we recommend that all legislative matters be referred to the legislative committee, consisting of fifteen members present, to be appointed by the president, at the first session, whose reports shall be acted upon without discussion.

J. A. BARR,
Chairman, pro tem.

The report of the committee was discussed by Drs. Eddy, Outten, Hoy, Bouffleur, Lane, Pierce, after which, on motion, it was adopted.

Dr. T. H. Briggs of Battle Creek, Mich., read a paper entitled, "Surgical Treatment of Injuries of Spinal Cord and Column," which is published in this issue.

The paper was discussed by Drs. Bouffleur, Hoy, Outten, Barr, Jackson and Murphy.

Dr. S. R. Wooster of Grand Rapids, Mich., followed with a paper entitled, "Rupture of Bladder with no Evidence of External Injury."

Discussed by Drs. Craig, Daugherty, Outten, Best, Buchanan and by the author of the paper.

Dr. Cassius D. Wescott of Chicago read a paper on "Traumatisms of the Eyeball," which was discussed by Drs. Welsh, Ball and the author.

The president then appointed the nominating committee, as follows:

Dr. A. Craig, Columbia, Pa.; Dr. C. D. Wescott, Chicago, Ill.; Dr. B. F. Riordan, Toronto, Can.; Dr. F. Lawrence, Bangor, Mich.; Dr. J. F. Oldham, Wichita, Kan.; Dr. W. H. Elliott, Savannah, Ga.; Dr. C. W. P. Brock, Richmond, Va.

On motion of Dr. Outten, the secretary was instructed to send a resolution of cheer and good will to Dr. J. B. Murdoch of Pittsburg, also expressing the regret of the association at

his absence at this time. The resolution was unanimously adopted by a rising vote.

On motion, the association adjourned until 8 p. m.

FIRST DAY—EVENING SESSION.

The association re-assembled at 8 p. m., and was called to order by the president.

The minutes of the preceding sessions were read and approved.

Dr. D. Emmett Welsh of Grand Rapids, Mich., read a paper entitled, "Color Blindness," which was discussed by Drs. Hoy, Wescott and Outten, and Dr. Welsh closed the discussion.

President Murphy then introduced the Hon. Alexander G. Cochran of St. Louis, general solicitor of the Missouri Pacific Railway, who delivered an address upon the "Relations Which Exist Between the Legal and Surgical Departments of Railroads." (Published elsewhere in this issue.)

Dr. Brock moved that a rising vote of thanks be extended to Mr. Cochran for his very interesting address, which was seconded and unanimously carried.

Dr. A. Alt of St. Louis read a paper entitled, "Tumor of the Lachrymal Gland."

Dr. James M. Ball of St. Louis contributed a paper on "The Eye Symptoms of Brain Tumor," but before reading it exhibited a sarcoma of the choroid which he had removed from the patient a few days before.

The paper was discussed by Dr. Wescott.

On motion, the association adjourned until 9 o'clock Thursday morning.

SECOND DAY—MORNING SESSION.

The association met at 9 a. m., with President Murphy in the chair.

The minutes of the preceding session were read and approved.

The secretary read two communications from Mr. Clark Bell of New York City, which, on motion, were ordered spread upon the minutes and published in The Railway Surgeon.

Dr. Ward, chairman of the committee on revision of the constitution and by-laws, reported the work of this committee, and a motion was made and carried to have the report printed in the Railway Surgeon, so that the members could digest it and be prepared to act on it at the next meeting.

Dr. E. R. Lewis of Kansas City read a paper entitled, "One Fallacy Regarding Ununited Fracture, with Report of Cases," which was discussed by Drs. Jay, Crook, Thorn, Hoy, Daugherty, McCrea, Lane, Howard, Nash and Lewis.

Dr. Outten read a letter from Dr. J. B. Murdoch of Pittsburg, in which the doctor regretted his inability to attend the meeting.

A communication was also read from Dr. Thomas H. Manley, regretting his not being able to attend the meeting.

Dr. J. M. Dixon of Springfield, Ill., read a paper entitled, "Tetany From Traumatism."

Dr. C. W. Tangeman of Cincinnati contributed a paper on "The Value of Examinations of Sight, Color Sense and Hearing in Railway Employes." This paper was discussed by Drs. Ball and Wescott, and the discussion closed by the author of the paper.

Dr. A. I. Bouffleur of Chicago followed with a paper entitled, "A Plea for Delay in the Amputation of Tissue of Doubtful Vitality, with Special Reference to the Treatment of Such Tissues," which was discussed by Drs. Daugherty, Hoy, Pierce, Hungate, Peck, Jackson, and Jay, and the discussion closed by the essayist.

On motion, the association adjourned until 2 p. m.

SECOND DAY—AFTERNOON SESSION.

The association reassembled at 2 p. m., and was called to order by the President.

The minutes of the preceding session were read and approved.

Dr. Robert Barclay of St. Louis read a paper entitled, "Better Methods of Testing the Hearing of Railway Employes," which was discussed by Dr. Welsh.

Dr. Outten took the chair at this juncture and President Murphy addressed the association on the "Conservative Treatment of Injuries to Large Vessels."

Discussed by Drs. Bouffleur, Summers, Daugherty, Outten, Jelks, Hungate, and the discussion closed by Dr. Murphy.

Dr. Thos. O. Summers of St. Louis read a paper on "Railway Neurasthenia," which was discussed by Drs. Outten, Hoy, Punton, Daugherty, Lanphear and Barclay.

Dr. A. H. Levings of Milwaukee, Wis., contributed a paper entitled, "Restoration of Nerves after Injury, Experimental Research and Clinical Observations," which was discussed by Drs. Outten and Thorn.

On motion of Dr. Thorn, a rising vote of thanks was extended to Dr. Levings for his very valuable and interesting contribution.

Dr. J. J. Buchanan of Pittsburg contributed a paper entitled, "Capital Operations Without an Anæsthetic and the use of Large Saline Infusions in Acute Anæmia."

This paper was discussed by Drs. Kane, Elliott, Daugherty, Jay, Pierce, Hoy, Barclay, Outten, Martin, Eddy, Trainer, Greenley, and the discussion closed by Dr. Buchanan.

The president announced as the auditing committee, Drs. Ward, Briggs and Eddy.

He also announced the judicial or legislative committee as follows: Drs. W. B. Outten of

Missouri, S. S. Thorn of Ohio, C. W. P. Brock of Virginia, S. R. Wooster of Michigan, A. O. Williams of Iowa, J. E. Luce of Wisconsin, E. R. Lewis of Missouri, C. D. Wescott of Illinois, W. J. Eddy of New York, W. R. Hamilton of Pennsylvania, W. E. Lincoln of Minnesota, Bruce L. Riordan of Canada, W. R. Priest of Kansas.

On motion of Dr. Hoy, seconded by Dr. Elliott, the association then adjourned until 8 p. m.

SECOND DAY—EVENING SESSION.

The association reassembled at 8 p. m., with President Murphy in the chair.

The president introduced Dr. John B. Deaver of Philadelphia, who delivered an address entitled, "Review of the Symptoms and Diagnosis and the Indications for Treatment of Intra-Abdominal Injuries Without External Evidence of Violence."

Dr. Outten moved that a vote of thanks be extended to Dr. Deaver for his excellent address. President Murphy requested that a rising vote be taken, which was unanimous.

Dr. W. B. Outten of St. Louis read a paper entitled, "A Study of Synthetic Metabolism in the Healing of Granulating Wounds."

The paper was discussed by Drs. Lanphear, Daugherty, Broughton, Hoy, Summers, Mudd, Lewis, Lee, Lane, Trainer, Murphy, and discussion closed by Dr. Outten.

Dr. Wellinton Adams of St. Louis gave a demonstration of the Roentgen or "X" ray, and made some remarks on the value of these rays to the scientific physician and surgeon.

Dr. Geo. W. Crile of Cleveland, O., then showed some stereopticon views of deformities following fractures, after which the association adjourned, to meet at 9 a. m. Friday.

THIRD DAY—MORNING SESSION.

The association met at 9 a. m., and was called to order by the president.

The minutes of the preceding session were read and approved.

Dr. A. J. Fulton of Kansas City read a paper entitled, "Inflammation of Bone."

The paper was discussed by Drs. Kane, Daugherty, Martin, Hungate, Murphy, and discussion closed by the author of the paper.

The election of officers was next taken up, with the following result:

President—Dr. Frank J. Lutz of St. Louis, Mo.

Secretary—Dr. C. D. Wescott of Chicago, Ill.

Dr. Fulton moved that the rules of the association be suspended and that Dr. Lewis be unanimously re-elected treasurer for the ensuing year by a rising vote. Carried.

Dr. Lewis, in a brief speech, expressed his feeling of gratitude at the continued confidence of the association, and said he was sorry that he could not in the future serve the association better than he had in the past.

The president then called for the report of the committee on nominations, which was read by Dr. Wooster, as follows:

Vice-Presidents—Dr. W. R. Hamilton, Pittsburg, Pa.; Dr. J. H. Letcher, Henderson, Ky.; Dr. W. J. Eddy, Oswego, N. Y.; Dr. J. Alexander Hutchison, Montreal, Can.; Dr. A. C. Wedge, Albert Lea, Minn.; Dr. Rhett Goode, Mobile, Ala.; Dr. Edward W. Lee, Omaha, Neb.

Executive Committee—Dr. A. I. Bouffleur, Chicago, two years; Dr. J. N. Jackson, Kansas City, two years; Dr. J. A. Duncan, Toledo, O., two years; Dr. J. B. Murphy, Chicago, one year; Dr. S. S. Thorn, Toledo, O., two years; Dr. W. D. Middleton, Davenport, Ia., two years, and Dr. A. J. Barr, McKees Rocks, Pa., one year.

Honorary Members—Dr. John B. Deaver, Philadelphia, Pa.; Hon. Chauncey M. Depew, New York City; Hon. Alexander G. Cochran, St. Louis, Mo.; Dr. J. W. Ayer, Capetown, South Africa; Dr. H. Darling, Capetown, South Africa; Mr. B. S. Josselyn, Kansas City, Mo., general manager Kansas City, Osceola & Southern Railway.

On motion, the report of the commitee was adopted.

When the association came to consider the place of next meeting, Dr. Brock moved that this matter be placed in the hands of the executive committee, and that as soon as the committee has decided on the place of meeting, it be made known through The Railway Surgeon. Carried.

The cities of Pittsburg, St. Paul, Chicago, Toledo and New York were suggested for the benefit of the executive committee.

Under the head of "Special Committees," no reports were made.

Dr. Hoy moved that the association continue in session until all the business and the reading of papers had been disposed of, so that when the convention did adjourn it could do so sine die. Carried.

Dr. Ward of the auditing committee, stated that, in view of Dr. Hoy's resolution, this committee would be unable to report to the association, and he therefore asked the privilege that the committee be empowered to prepare its report and place it in the hands of the executive committee.

On motion, this request was granted.

The president-elect, Dr. Lutz, in accepting the office of president, said: "Members of the National Association of Railway Surgeons:—When Dr. Thorn informed me, on my arrival here, that the undeserved and distinguished honor of being elected president of this asso-

ciation had been conferred upon me, I thought it was an after-thought of night before last on his part, and that he was guying me. I yet do not believe it. I really feel, gentlemen, that I do not deserve this position. On the other hand, I feel to be elected president of this association is worth the ambition of any man's life-work. I want to say for myself, that I do not think it is intended as a personal compliment to me at all, but is rather an expression of good will on part of the association for the surgeons of the great city of St. Louis, and of this great state, and as such I take it, and I thank you all heartily for this expression of your confidence, which I hope will not be illy-founded. I assure you that I shall endeavor to the very best of my feeble ability to continue in the footsteps of the illustrious gentlemen who have occupied this position in the association, and I would ask each and every member to contribute his mite toward making the future meetings as successful as those of the past have been. Again, gentlemen, I thank you, one and all, most cordially." (Applause).

Dr. Emory Lanphear of St. Louis, Mo., read a paper entitled, "Why Railroad Surgeons Should Not Try to Practice Aseptic Surgery," which was discussed by Drs. Crile, Elliott, Fulton, Thorn, Daugherty, McCrae and Jelks, and the discussion closed by Dr. Lanphear.

Dr. W. J. Eddy offered the following resolution:

Resolved, That a vote of thanks be extended to Dr. W. B. Outten, editor of The Railway Surgeon, and Dr. C. D. Wescott, assistant editor, for their untiring devotion to the success of the journal and for the efficient manner in which they have edited the same.

Seconded by Dr. Elliott, and unanimously carried.

Dr. Barr offered the following resolution:

Resolved, That inasmuch as the place of the next meeting of this association has been placed in the hands of the executive committee, we ask that the committee, as soon as it decides on the next place of meeting, announce the same in The Railway Surgeon, so that the members may be able to make their arrangements accordingly.

Seconded and carried.

Dr. W. S. Caldwell of Freeport, Ill., read a paper entitled, "Nephritic Calculi," which was discussed by Dr. Jelks.

Dr. Evan O'Neil Kane of Kane, Pa., read a paper entitled, "An Aluminum Clamp Artery Compressor to Supersede the Ligature."

Dr. Barr reported on behalf of the committee on resolutions, as follows:

Resolved, That we extend a rising vote of thanks to our worthy president for the able and efficient manner in which he has discharged his duties; also that a vote of thanks be tendered to the committee of arrangements and the reception committee.

Seconded and unanimously carried.

The retiring president, Dr. Murphy, said: "I take this opportunity to thank you for your very kind and courteous treatment of me during the sessions. I am very grateful to each and every one of you. I also thank you for the excellent papers which you have presented and for the forcible and, at times, spirited discussions that you have entered into on the papers presented.

"From your conduct at this meeting,I think the motto placed at the heading of the programme on the seventh page should be adopted as a motto for this association: 'Let us be resolute in our pursuits, but gentle in the manner of pursuing them.' I think that exemplifies your conduct through this entire meeting. Again, I thank you for your kindness to me. (Loud applause.)

"I think Dr. Outten, the chairman of the committee of arrangements, deserves our sincere thanks, also the local profession, who have given us so much attention while we have been here in a quiet way, and I will ask the members to rise and extend a vote of thanks to both Dr. Outten and the local medical profession of St. Louis."

The vote was unanimous.

There being no further business before the association, either scientific or otherwise, President Murphy, on motion, declared the meeting adjourned sine die.

The New Hampshire Medical Society.

The one hundred and fifth annual meeting of the New Hampshire State Medical Society is being held as we go to press, June 1 and 2, at Concord, N. H.

The following is the scientific programme:

Dissertation.—"Medicine of To-day." By D. E. Sullivan, M. D., Concord. Discussion opened by E. A. Clark, M. D., Concord.

Report on Surgery.—"The Treatment of Several Tendons." By W. A. Megrath, M. D., Loudon. Discussion opened by W. H. Mitchell, M. D., Loudon.

Essay.—"Before and After Treatment of Laparotomy." By A. F. Wheat, M. D., Manchester. Discussion opened by D. S. Adams, M. D., Manchester.

Dissertation.—"Modified Milk as a Food for Infants." By A. K. Day, M. D., Concord. Discussion opened by Geo. Cook, M. D., Concord.

Report.—"Gastro-Intestinal Diseases of Children." By I. G. Anthoine, M. D., Nashua. Discussion opened by M. H. Felt, M. D., Hillsborough.

Report.—"On Physical Exercise and Athletics." By J. W. Staples, M. D., Franklin Falls. Discussion opened by F. A. Stillings, M. D., Concord.

Dissertation.—"Myxeodema." By G. W.

McGregor, M. D., Littleton. Discussion opened by J. Wallace Russell, M. D., Concord.

Report.—"On Medical Legislation." By James T. Greeley, M. D., Nashau. Discussion opened by A. P. Richardson, M. D., Walpole.

Essay.—"Disordered Digestions." By L. J. Frink, M. D., Bartlett. Discussion opened by I. G. Anthoine, M. D., Nashua.

Essay.—"Altitude: Its Effects upon Different Individuals, with Report of Two Cases." By Geo. S. Gove, M. D., Whitefield. Discussion opened by G. P. Conn, M. D., Concord.

Report.—"On Variola." By Geo. Cook, M. D., Concord. Discussion opened by I. A. Watson, M. D., Concord.

The South Dakota Medical Assembly.

The "Medical Assembly" was organized at Sioux Falls, South Dakota, May 26, 1896.

The following is the scientific programme:

"Address in Medicine," Dr. Robert E. Conniff, Sioux City, Iowa.

"Address in Surgery," Dr. J. N. Warren, Sioux City, Iowa.

"Address in Gynæcology," Dr. Edward Hornibrook, Cherokee, Iowa.

"Address in Obstetrics," Dr. S. A. Brown, Sious Falls, South Dakota.

"Address in Anatomy," Dr. L. Phelan, Sioux City, Iowa.

"Address in Ophthalmology," Dr. R. E. Woodworth, Sioux Falls, South Dakota.

"Sparteine in Surgical Anæsthesia, Dr. G. G. Cottom, Rock Rapids, Iowa.

"Antitoxin in Diphtheria," Dr. W. H. Meyers, Sheldon, Iowa; Dr. Jos. Schwartz, Hartford, S. D.

"Injuries to the Eyeball," Dr. J. C. Dunlavy, Sioux City, Iowa.

"Bacteriology in Diagnosis, Dr. S. Olney, Sioux Falls, S. D.

"Pyonephrosis," Dr. William Jepson, Sioux City, Iowa.

"Lessons from 800 Confinements, Dr. F. J. Smith, Alton, Iowa.

"Hysterectomy: Its Uses and Abuses," Dr. V. B. Knott, Sioux City, Iowa.

"Afterbirths," Dr. T. S. Roberts, Sioux Falls, S. D.

"Extra-uterine Pregnancy," Dr. A. C. Bergen, Sioux City, Iowa.

"Proprietary Remedies," Dr. Geo. W. Bliss, Valley Springs, S. D.

"Obstetric Anæsthesia," Dr. W. M. Richey, Le Mars, Iowa.

"Ulcers of the Cornea," Dr. George Park, Sioux City, Iowa.

The purse of the patient frequently protracts his cure.—Zimmermann.

Miscellany.

(154) Pathogenesis of Uræmia.

Ajello and Paraveandalo (Lo Sperim, an. 49, fasc 4), as the result of numerous experiments on animals, believe that uræmia is closely related to the presence or absence of an internal renal secretion. Just as other glands have internal secretions, so has the kidney. The authors found that animals, after unilateral nephrectomy and without any treatment, died in from eight days to eleven months with albuminuria and cachexia. On the other hand, animals, after unilateral nephrectomy, when inoculated with renal juice prepared after the method of Brown-Sequard and D'Arsonval (20 c.cm. injected daily in dogs, 10 c.cm. in rabbits), did not present any albuminuria or cachexia, and lived in good health until killed for other experiments. After double nephrectomy without treatment the animals died in four to forty-eight hours; if treated with renal juice they lived from forty-eight hours to four days and more. The implantation of kidneys, whether subcutaneously or in the peritoneal cavity, gave negative results.—British Medical Journal.

The four humors in man, according to the old physicians, were blood, choler, phlegm and melancholy.—R. C. Trench.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate; situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address 'BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

THE Railway Surgeon

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RUPTURE OF THE BLADDER WITHOUT EXTERNAL EVIDENCE OF INJURY.*

BY S. R. WOOSTER, M. D., GRAND RAPIDS, MICH.

In reporting this case I am conscious of the fact that I shall not present anything new or instructive, or of special interest to the members of this association; neither will the experience gained in this case be of practical benefit in the treatment of cases of this character in the future; my only object in presenting it to you is to show the extent and severity of the injury, with no abrasion or discoloration, or any other external evidence of injury.

April 6, 1894, at 3:30 a. m., I was called to see Edward Adams, freight brakeman, aged 21, a strong, robust, healthy young man. I saw him about thirty minutes after being injured, and found him suffering severely from shock. His abdomen was distended, but he complained little of pain; his pulse was small and thready, and the skin was cool and moist. He said he was in the act of coupling an engine to a freight car when he was caught between the "bumpers." A careful examination failed to reveal any evidence of external injury. I had the patient removed to the hospital and introduced a soft rubber catheter, which readily passed into the abdominal cavity. With the aid of stimulants and rest, after a few hours waiting, the patient rallied considerably, his pulse became stronger and the surface warm. Under the influence of ether an incision was made in the median line of the abdomen which revealed a rupture of the abdominal muscles and fasciæ, and the bladder. The abdominal muscles were crushed, so to speak, and the bladder was ruptured throughout its long diameter. The peri-

* Read at the ninth annual meeting of the National Association of Railway Surgeons at St. Louis, Mo., April 30, 1896.

toneum was extensively ruptured transversely. We found a large quantity of urine in the abdominal cavity, which was sponged out as thoroughly as possible and then flushed with sterilized boric solution. The ureters and abdominal viscera were not injured.

The peritoneum was sutured with cat-gut, but we were unable to repair the muscles or fasciæ because of their crushed condition, some loose portions necessitating removal. The bladder was stitched to the lower angle of the abdominal incision, which was then closed and dressed antiseptically. A free incision was then made on either side of the one closed at divergent angles, in which deep drainage tubes were inserted. A syphon was arranged to carry the urine from the lower segment of the bladder to a receptacle. The patient reacted favorably from the operation, but died three days later from septic peritonitis.

Cases of this nature should impress us with the necessity of making early and thorough exploration, even though we have no abrasions or external evidence to guide us. There is no doubt but what the bladder was full and tense in this case which caused it to rupture more easily, but it hardly seems possible that the abdominal walls and muscles could have been torn and crushed as they were without the integument showing some evidence of injury.

Discussion of Dr. Wooster's Paper.

Dr. A. Craig, of Columbia, Pa.: I merely rise to report a somewhat similar case that fell under my care some years ago. It was not exactly a case of rupture of the bladder, but of the urethra and sphincters of the rectum, accompanied with a fracture and overlapping of the pelvic arch. The case cited by Dr. Wooster has reminded me of it because he states that there was no external injury visible in his case. In my case the only external evidence of injury was the depression of the innominate bones, one toward the other. There was a rupture of the sphincter of the rectum which permitted some blood to ooze. This case, I am happy to say, terminated more favorably than the one reported by Dr. Wooster. The patient is still living after seven years. An operation was done by Dr. Deaver of Philadelphia, who made a new urethra through the prostrate region, it being impossible to connect the posterior and the anterior part of the urethra. A bougie would pass out at the anus without effort. The urine passed through the anus. Dr. Deaver made a secondary operation in this case five years ago, which was similar to the first one. If the doctor is here he will probably take pleasure in giving an account of this case, which I know would be of interest to the Association.

I might say here, because I think it is a question of interest, that for six years this man was deprived of sexual relations, but after the operation was performed by Dr. Deaver the sexual desire returned. He is now married and is connected with the Pennsylvania Railroad.

Dr. P. Daugherty, of Junction City, Kan.: I look upon this as an unique case—something I have never heard of before. The unique part is not the rupture of the bladder, but the rupture of the abdominal muscles and crushing of the tissues without any discoloration or external signs of injury. It is very remarkable, and I do not think I have ever read or heard of anything of the kind before. It is easy enough to rupture the bladder if it is full, by compression, but rupture of the muscles of the abdomen, as the doctor found in this case, is a very remarkable thing.

Dr. W. B. Outten of St. Louis, Mo.: These cases bring to mind others that I have seen. There is one symptom, provided that we get a history of the case, which I think invariably points to rupture of the bladder or of the urethra itself or both. You will find very frequently that where a man's pelvis has been brought in contact with some strong force and where it has been pressed in, that the triangular ligament cuts directly through the urethra, and ruptures directly into the bladder. There is one symptom that has been taught me by experience in these cases, and that is, an unusual ecchymosis which usually extends from the seat of injury backward toward the anus and forward involving the scrotum. With this one symptom I would not hesitate to say that we had rupture of the urethra, and rupture of the bladder, and would straightway perform an operation for the purpose of correcting the trouble. I could relate to you some eight or ten cases of this kind. At one time there was an absolute dread among surgeons to do an external urethrotomy, particularly where there was much lacerated tissue, but now we are working intelligently upon this part of the economy without any dread of fear. At that

time these cases were followed by extravasation of urine and abscess and finally by death. There are very few instances in which we are competent to effect a cure, because in addition to having a ruptured bladder to contend with, and likewise a torn urethra, we have a fractured pelvis. I have seen cases where there has been a fracture of the pubes and ischium, where the pelvis was so twisted that all the relations were changed and the sacro-iliac synchondrosis was movable, and yet there was no indication of injury except beneath the scrotum. There, however, there was an extensive ecchymosis. When you get a perfect history of these cases the symptom of ecchymosis alone will lead you in the right direction.

Dr. A. J. Best, Centralia Kan.: I had a little experience last summer in one of these cases. A young man, while cutting grain fodder, slipped and fell, and one of the sharp points of the machine penetrated his anus. The sphincters were cut and the bladder torn to the extent of two and one-half inches. I saw the man several hours after the injury, at which time he was in a state of collapse. I tried to pass a catheter, but could not do so. I then washed out the rectum and put him on opiates, and he got along very nicely. It occurs to me that in these operations for bladder trouble that the rectum is the best place to operate sometimes.

Dr. Buchanan of Pittsburg, Pa.: When we are called upon to make a diagnosis of suspected rupture of the bladder, we should, of course, at first endeavor to exclude rupture of the urethra, and, as far as my experience goes, the best means for determining whether there be a rupture of the urethra or not, is to pass a stiff catheter. If we have a rupture of the urethra we will very likely find a rough place in the canal. If the catheter passes smoothly into the bladder, there is probably no rupture of the urethra. Having gotten into the bladder and drawn some of the bloody urine, it becomes necessary to find whether this is due to a ruptured bladder or not, and the best test is that known as Weir's. He passes in a measured amount of aseptic fluid and determines whether he gets it all back or whether there is more or less. If, after emptying the bladder and introducing a certain amount of aseptic fluid, we find only a small amount returns, we have good reason to suspect intra-peritoneal rupture of the bladder. If we have found there is no rupture of the bladder, and we have reason to suppose there is rupture of the urethra, I think it is our duty at once to open the perineum in the median line, and explore the urethra directly through the opening. If we have unfortunately been unable to pass an instrument into the bladder, and have opened the urethra and are still unable to reach the bladder through the urethra, it becomes our duty to open the bladder above the pubes and we will find in most cases that this is a very easy matter. We can then perform retrograde catheterization, passing a catheter through from above down and either through the entire course of the urethra, or out through the perineum, and in this way save our patient from all the dangers of extravasation. If we have found that there is a rupture of the bladder, of course laparotomy is our only resource, and coming from Pittsburg, I do not want to let this opportunity go by without saying that the first operation for rupture of the bladder was done by Dr. A. G. Walter of Pittsburg, in 1862, and was not reported for seventeen years. I believe that this was the first abdominal section that was ever deliberately made for a traumatism.

Dr. Wooster (closing): Cases of this nature are not of frequent occurrence, and I have my doubts whether any treatment would have saved the life of this man. The abdominal cavity was largely infiltrated with urine. I removed it as well as I could. My main object in reporting the case was to show the extensive injury to the muscles and to the abdominal walls. While we have heard of rupture of the bladder, yet none of us have seen or ever heard of anything so extensive as in this case, without the patient being almost instantly killed. As I have previously remarked, there was no abrasion or discoloration of the skin.

Dr. Daugherty: Was there any fracture of the pelvic bones?

Dr. Wooster: Not any; and the ureters were intact. The urine was deposited in the lower segment of the bladder.

Dr. Daugherty: How long did he live?

Dr. Wooster: Three days.

It is best to leave nature to her course; she is the sovereign physician in most diseases.—Sir W. Temple.

THE USE OF THE OPHTHALMOSCOPE BY THE GENERAL PRACTITIONER.*

By Cassius D. Wescott, M. D., of Chicago.

As my place of residence makes it impossible for me to enjoy the privileges of membership in this society, I feel much honored in being invited to address you, and I am particularly pleased that the subject chosen for me should be the use of the ophthalmoscope in general medicine, for it is a subject in which I am much interested.

Growers, in his excellent work on Medical Ophthalmoscopy, begins his introduction as follows:

"The ophthalmoscope is of use to the physician because it gives information, often not otherwise obtainable, regarding the existence or nature of diseases elsewhere than in the eye. This information depends upon the circumstance that we have under observation. 1. The termination of an artery and the commencement of a vein, with the blood circulating in each. 2. The termination of a nerve, which, from its close proximity to the brain, and from other circumstances, undergoes significant changes in various diseases of the brain, and in affections of other parts of the nervous system. 3. A nervous structure, the retina, and a vascular structure, the choroid, which also suffer in a peculiar way in many general diseases."

Of course no one will deny the utility of being able to find within the eye corroborative, and sometimes the only positive evidence of serious disease in other organs, especially if such information can be obtained quickly and easily. When most of us were students, however, the use of the ophthalmoscope was not systematically taught as a part of the undergraduate work, and in the medical school with which I am connected, one of the leading colleges of the West, this is only the second year in which such a practical course has been a requirement, and I regret to say that it has been rather difficult to excite the proper degree of enthusiasm in the students for the reason, no doubt, that the value of ophthalmoscopy in general diagnosis is not sufficiently impressed by teachers and writers on general medicine and surgery. Under these circumstances it is not surprising that comparatively few physicians are using the ophthalmoscope as a matter of routine, even though it may give us valuable aid in the study of cases of injury and disease of the brain and its membranes, especially cerebral tumor and abscesses; disease and injury of the spinal cord; so-called functional disease of the nervous system, including insanity; diabetes; nephritis; disease of the heart and of the blood; syphilis; tuberculosis; rheumatism; pyæmia and septicæmia; typhoid and many other fevers, etc., etc.

I know of no better way in which to interest you in this instrument than to show you how easily its use may be acquired and that without a teacher. I must, however, take you back to first principles and I hope that those of you who use the ophthalmoscope and are familiar with the optical principles upon which its use depends will bear with me while I explain these principles somewhat in detail for the benefit of those who have not given the matter their attention.

The eye, as you all know, is a camera in the form of a sphere. The cornea, the crystalline lens and the aqueous and vitreous humors constitute the refracting apparatus and correspond to the lenses of the photographer's camera. The iris is an automatic diaphragm and the inside of the globe is made black by the pigment of the uveal tract. The retina forms the most sensitive of plates upon which pictures are constantly formed, while the eyes are open, and conveyed to the brain as definite visual impressions through the fibers of the optic nerves and tracts. We are able, at will, to adapt the eye to vision at different distances by means of the accommodation, which, as you will remember, consists in changing the focus of the camera by altering the convexity of the crystalline lens.

By the refraction of the eye we mean its power of focusing rays of light upon the retina. In emmetropia or normal refraction, parallel rays or those from a distance, are focused upon the retina without any effort of accommodation. It is evident that if we would see the fundus of an eye, we must throw light through the pupil and upon the retina and receive the light reflected therefrom into our own eye in such a way as to form a sharp image. Helmholtz first accomplished this in 1857 by placing obliquely before the eye a simple plate of glass. Rays from a convenient lamp, falling upon the glass plate, were, in part, reflected into the eye and illuminated the retina. The rays reflected back from the fundus arriving at the glass plate were again reflected, in part, back to the source of light, but some of the light passed through the glass plate into his own eye, enabling him to see the illuminated fundus. Much more light is obtained by using a piece of glass with a mirror coating, a round hole through the coating enabling the observer to see through it. Still more light is obtained by using a concave mirror, because the rays reflected from such a surface are rendered convergent.

An ophthalmoscope then consists essentially of a mirror with a hole in it, but our modern

* Read by invitation before the Section of Pathology of the hicago Academy of Sciences, Dec. 23, 1895.

instruments are provided with a concave mirror and a revolving disc containing a series of convex and concave lenses which can be rotated at will behind the perforation in the mirror.

Figure 1 represents the path of the rays when the ophthalmoscope is used in the direct method. In this method the observer sees the eye just as he would see an object through a convex glass or simple microscope. The

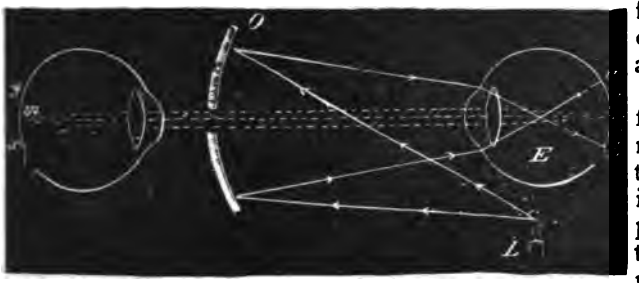

FIG. 1. FORMATION OF THE IMAGE IN THE DIRECT METHOD OF OPHTHALMOSCOPY.

image of the eye-ground is a virtual one; that is, it seems to be behind the eye. It is magnified and erect.

From the candle L, the divergent rays falling on the mirror O, are rendered convergent. Passing through the refractive media of the eye, they are rendered still more convergent and come to a focus in the vitreous humor; diverging again, they form on the retina, the illuminated circle, whose diamter is a b. If this eye is emmetropic, rays from the points x and y will pass out of the eye into the eye of the observer. All the rays from the point x will be parallel. Rays from the point y will also be parallel. No image is formed, but the rays continue their course, and, entering the eye of the observer, come to a focus on his retina at the points x' and y.' Rays from the point x in the patient's eye unite at the point x' on the observer's retina. In a similar manner rays from the point y in the patient's eye unite at the point y in the observer's eye. These rays, projected backward, seem to lie in their true position. Rays from the middle point m of the patient's eye unite on the middle point m of the observer's eye, and are projected backward to the point from which they originated. The point x, above m in the patient's eye, is represented by x in the observer's eye below the middle point m. The point y below m, in the patient's eye, is represented by y above m in the observer's eye. (The figure and explanation are from Dr. Schweinitz).

It is evident, from a study of the above diagram, that in order to see any details in the fundus of a patient's eye, the surgeon's eye must be in a condition to focus parallel rays of light upon its retina. In other words, it must be emmetropic and he must be able to relax his accommodation as in distant vision; but we are all so thoroughly habituated to the use of the accommodation in looking at things close by that the first thing we have to learn in using the ophthalmoscope is to break this habit—to relax the accommodation at will, so that the eye of the surgeon, placed close in front of the patient's eye, is in a condition to receive parallel rays of light and to focus them upon the retina. In order to acquire this ability I have found it of service in approaching the patient or the eye-model in the dark room, to stare at the black wall as if looking into vacancy.

In my class work at Rush College, I have first given the students plain perforated mirrors and pill boxes with printing in the bottom and an aperture in the cover corresponding to the pupil of the eye, and they have practiced in the dark room, getting control of the light. They have also practiced the proper position in which the ophthalmoscope should be held—the handle held easily in the hand, the finger upon the side, and steadied by resting it against the nose and brow in such a way that whenever it is put up it comes naturally in position for the eye to see through the aperture. Then each student has taken his ophthalmoscope and gone through the same maneuvers with the pill box.

We also use a schematic eye, made by Queen & Co., constructed upon suggestions made by Dr. Wm. Thomson of Philadelphia several years ago. It is in accordance with strict mathematical formulæ, and consists essentially of two pasteboard tubes, one sliding

FIG. 2. QUEEN'S MODEL OF THE EYE FOR OPHTHALMOSCOPIC PRACTICE.

into the other, the first one containing in the front part a convex lens of 20 diopters. At the back of the sliding tube there is a picture representing the retina, which can be brought nearer to or farther from the lens representing the refractive media of the eye. By this movement all refractive states of axial ametrophia up to 6 D. hypermetropia and 6 D. myopia can be exactly reproduced, and are read off by means of a scale on the sliding tube.

Each student has been asked to provide himself with one of these models to practice upon at home, as well as in the dark room in the college laboratory. There we have standards

upon the top of which are three of these schematic eyes; one is emmetropic, one is hyperopic and the other is myopic. Students have been advised to practice first, the examination of the hyperopic eye, because it is easy to see the details of the fundus without complete relaxation of the accommodation. When they are able to partially relax the accommodation and see the fundus of the hyperopic eye easily, they are advised to practice upon the emmetropic eye, first approaching from a distance, staring at the blank wall behind the model and gradually relaxing the accommodation. Suddenly they see the details of the painted fundus. When one is once able to do this, subsequent efforts are rendered very easy. Then we have them practice upon the myopic eye, and they very soon discover that it is quite impossible to see the details of the retina without employing the concave lenses which are contained in the ophthalmoscope. This is readily understood when we consider the path of the rays of light coming out from the myopic eye.

They come to the surgeon's eye convergent and must be made parallel or divergent by passing through a concave lens before they can be made to focus upon his retina. For this reason we have in the revolving disc of the ophthalmoscope a series of concave lenses which can be rotated at will behind the aperture of the mirror. Likewise, if the surgeon is myopic he must, in using the ophthalmoscope, either wear his correcting glasses, or what is more convenient, turn into the aperture of his instrument a lens equal in strength to the degree of his myopia. If the surgeon be hypermetropic he may first render his eye emmetropic by turning into the instrument a convex lens of proper strength.

If we desire to estimate the degree of myopia with the ophthalmoscope we may do so by finding the weakest convex lens, through which we may see the details of the eye ground clearly, after allowing for error in our own eye and completely relaxing the accommodation. Likewise we may estimate the amount of hypermetropia in an eye under the influence of a mydriatic by finding the strongest convex lens with which we can see the fundus clearly. Unless we have perfect control of our accommodation at all times, it is evident that the measurements cannot be depended upon, and the surgeon must also know the refraction of his own eyes and allow for any defect.

In using the ophthalmoscope by the indirect method we interpose between the instrument and the patient's eye a convex lens of about 3 inches focus and turn into the aperture of the ophthalmoscope a convex lens of 10 inches focus. A real, inverted image of the interior of the eye is formed and the method is similar in principle to that of the compound microscope.

The ophthalmoscope mirror O (Fig 3) is held at a considerably greater distance from the patient than in the direct method. The rays from the candle come to a focus before reaching the eye or object-lens. They then diverge, and, passing through the object-lens l, are rendered convergent. After traversing the dioptric media of the eye, their convergence is increased, and once more they unite somewhere in the vitreous humor, from which point they diverge and form a circle of illumination on the retina. Their course, in passing from the candle until they reach the retina, is shown by the arrow-heads in the figure.

A portion of the retina, a to b, represented by the arrow, forms an image, b' a', between the lens and the observer's eye, represented by the inverted arrow. Rays from the point a, on the upper part of the retina, pass out of the eye parallel to each other. After passing through the object-lens l, they are rendered

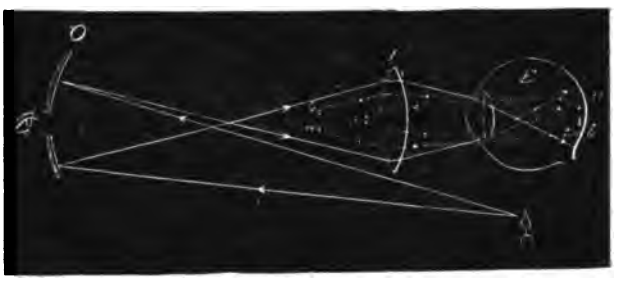

FIG. 3. FORMATION OF THE IMAGE IN THE INDIRECT METHOD OF OPHTHALMOSCOPY.

convergent and some to a focus at the point a' in the lower part of the inverted arrow. In the same way rays from the point b on the lower part of the retina are parallel on passing out of the eye, but are rendered convergent by the lens l, and come to a focus at a point b' in the upper part of the inverted arrow. It is this æreal image that the observer sees, and not the eye ground of the patient. Rays from this image are focused on the observer's eye, just as rays from the retina are focused in the direct method, i. e., the rays from the point a' are focused on a higher portion of the observer's retina, and rays from the point b' are focused on a lower portion. They are likewise projected back to the points in the image from which they originated. (De Schweinitz.)

By the direct method the objects seen are magnified about 15 diameters, but in the indirect method we obtain a view of a much larger portion of the retina at one time, magnified about 4 diameters. As in microscopy, it is best to examine specimens first with low power, so in ophthalmoscopy it is best to use first the indirect and then the direct method in every examination.

In the choice of instruments I give my

preference to those of the Knapp model, having the circular, fixed mirror, and containing about 15 lenses. Such an instrument can be had for about ten dollars and will not only last a lifetime, with good care, but is sufficiently elaborate for any examination which the general practitioner is called upon to make.

There are a number of atlases of ophthalmoscopy. That of Jaeger is most elaborate, but I know of no better guide for the student and general practitioner than "Medical Ophthalmoscopy" by Growers, already referred to.

DISCUSSION BY DR. H. T. PATRICK.

Mr. President and Gentlemen:

I thank you for your flattering invitation to say something of the use of the ophthalmoscope in nervous diseases. In return, I shall endeavor to avoid dry technicalities and to mention only such points as may be of use to every physician. No neurologist worthy of the name can practice without the routine use of the ophthalmoscope, and as every general practitioner must be a neurologist as well as gynæcologist, obstetrician, dermantologist and what not, he, too, if he would do good work, must be familiar with the instrument and know something of the things he sees with it.

In neurology the interest of ophthalmoscopy centers about the choked disc. As specific examples are generally more instructive and stick better in the memory than broad generalities, I beg your kind indulgence while I mention with the greatest possible brevity a few cases seen within the last year. They will serve at once as a practical introduction and as fair illustrations of the value, as well as the limitations, of the ophthalmoscope in neurology, for the instrument has its limitations as well as its uses. It is an efficient ally and may enable us to make a diagnosis when other means fail, but alone it is not enough and we are to count it only one of the many diagnostic aids, mental or mechanical, in our professional armanentarium.

Last spring I was asked to see a girl of 17 who had severe headaches, and had had several peculiar convulsions, the character of which led her physician to suspect hysteria. A careful review of the history and a careful examination pointed rather to tumor of the brain, and an examination of the eyes showed choked disc, which certainly excluded hysteria and made the diagnosis of tumor almost certain.*

The young man whom you have just had the opportunity of examining came to us for failure of vision only. Examination, as you have seen, revealed choked disc, which led to examination for other symptoms of tumor which were then found.

Shortly before I saw the young girl whom I have just mentioned, I had referred to me a man, aged 34, who had been seen by two most excellent physicians. He complained simply of headache, occasional vomiting and some silght tingling now and then on the right side. One doctor gave him something for his stomach, the other something for headache. He had a sudden slight apoplectic attack with right hemiplegia and aphasia, at which time I first saw him and found double choked disc. Careful inquiry then elicited a history that comported well with the diagnosis of tumor and an approximate localization was not difficult. He was put on active specific treatment to exclude gumma before operation, when three days later he had a second apoplectic stroke, evidently from thrombosis due to the tumor, with complete hemiplegia, total aphasia and hemianopia, a condition for which an operation could do but little. Had an ophthalmoscopic examination been made earlier in this case it is possible that the tumor might have been located and removed, saving the man from subsequent total disability.

I saw a few weeks ago, with Dr. Colburn, a boy who had rapidly lost sight in the left eye and was rapidly losing it in the right. Examination of the nervous system was absolutely negative. Now, this sort of thing occurs, especially in young people, as one of the symptoms of hysteria, but Dr. Colburn could make out a blurring of the discs, and a few days later Dr. Mahoney found unmistakable choked discs which at once definitely excluded functional disease, or at least was positive evidence of organic trouble, a decision which the subsequent course of the case confirmed.

A few days ago I saw, with Dr. Manierre Jr., a young lady who had complained for several days of severe headaches, with vomiting. Headache and vomiting are symptoms that occur in a multitude of affections. Examination showed choked discs, which at once excluded a number of these affections. The choked discs did not serve to make the diagnosis, but they brought us near to it.

Last summer I saw, through the kindness of Dr. Henrotin, a young married man who was said by one of the very best and most careful diagnosticians in this city to have artero-sclerosis. True, he did have some artero-sclerosis, but a glance at the optic discs would have shown at once that that was not his principal trouble. He had pronounced choked discs and the case ran the typical course of a rapidly growing brain tumor, probably carcinoma.

On two different occasions, in probably the largest nervous clinic in Germany, I was enabled to correct a false diagnosis by an ophthalmoscopic examination. Both were cases of brain tumor.

Now, for the reverse side of the shield. Some months ago Dr. John Bartlett sent a young

*Since the above discussion the case has come to autopsy, which confirmed the diagnosis.

man to me who was having severe epileptic fits. I saw him in a number of these and they were distinctly of the Jacksonian type, i. e., they pointed to a gross lesion of the cerebral cortex. I at once suspected a gumma and he had a clear syphilitic history, but the optic discs were normal, and principally on this account I made a diagnosis of local meningitis and not of tumor. He improved (but was not cured) under treatment and went to a neighboring city, where he died suddenly. A post-mortem revealed a tumor, said to be as large as a hen's egg, exactly in the location I had indicated. In this case the negative result of the ophthalmoscopic examination led to a wrong diagnosis.

Nearly a year ago Dr. Wm. H. Wilder, than whom there is certainly no more careful and competent ophthalmologist, sent me a young lady supposed to be suffering from brain tumor. She had obstinate headaches, vomiting, dizziness, impaired vision and double choked disc. After a careful examination I was inclined to think the whole might be due to anæmia. I examined the blood and found the girl had only one-half the hæmoglobin she was entitled to. Her symptoms, including the choked discs, cleared up under iron, fresh air and improved nutrition. In this instance, then, the ophthalmoscopic findings led the diagnostician astray.

Before mentioning in detail some of the more important relations of choked disc to nervous diseases, I would like to venture a few practical hints, gleaned from my own experience, as to the use of the ophthalmoscope.

1. Never be satisfied with an imperfect view of the fundus; and to get this, unless you are an expert, you must dilate the pupils. Then do not be in a hurry, and do not desist until you have seen all the details.

2. Whether or not you use the indirect method, always examine by the direct, as a very slight choked disc may escape recognition by the former. Personally, I very seldom use it.

3. Unless you have become very skillful and have had a most extensive experience, such as our friend Dr. Wescott, do not make a diagnosis of hyperæmic, congested or pale discs; in other words, never draw conclusions from the color of the discs alone. It normally varies enormously, as much as do the cheeks of your friends as you meet them on the street.

4. For us who are not among the most distinguished of ophthalmologists, optic neuritis and choked disc are interchangeable terms as far as the appearances of the fundus are concerned. There is said to be some difference between an optic neuritis, due to the propagation of inflammation from a lesion affecting directly the optic fibers and a choked disc due to a distant lesion, but we would do well not to attempt to make the differential diagnosis with the ophthalmoscope.

I have been greatly interested in Dr. Wescott's demonstration of artificial eyes and his method of using them for instruction. They are doubtless a valuable aid to the student. But, ingenious and convenient and useful as they are, I wish to say, with some emphasis, that they are not necessary. Any practitioner who has an ophthalmoscope may learn to use it well at the cost of a little time and patience. It is not difficult. When I left medical college I had never tried to see the fundus. I believe I had never seen anyone else try, but as a hospital interne I soon learned that the use of the ophthalmoscope was a good thing to know and began to practice on the patients. Practice on yours. Practice on your office girl, on your servant girl, on your driver, on your friends. Your patients will not resent it; will rather esteem you for making so thorough an examination. The dilitation of the pupil, caused by cocaine, is ample for the purpose and disappears in a few hours.

To return to choked disc. The presence of choked disc nearly always indicates one of three diseases; tumor, abscess or meningitis. Tumor, of course, including gumma and the meningitis may also be due to syphilis. The majority (4-5) of cerebral tumors develop choked disc at some period of their course, and the majority of choked discs are caused by tumors. But the choked disc may occur late in the course of neoplasm, even as late as nine years after its inception. It is always a more or less transient condition, terminating either in optic atrophy or recovery. An optic neuritis may develop very rapidly after the tumor has existed for a long time.

In a general way, rapid development of choked disc means a rapid development of the tumor and visa versa. So, in a case in which the symptoms of tumors have existed for a long time and choked disc suddenly makes its appearance and develops rapidly, the prognosis would be bad. Tumors which invade by pressure and displacement only, not by infiltration, are not so apt to produce neuritis; possibly they are ordinarily of slow growth. Tumors springing from the dura-mater and those of the vertex are not so apt to produce optic neuritis as are those in the substance of the brain and at the base. Hence, in an old case of tumor in which there is no optic neuritis, the growth is probably of the vertex and superficial; that is, operable. Choked disc, perhaps, in the majority of instances develops first, and is more intense on the same side as the tumor, but the reverse is occasionally found. Aside from the secondary optic atrophy subsequent on choked disc, the tumor may cause primary or simple atrophy, but only when it involves directly the optic nerve itself.

It may be well to note that we may have a combination of these two conditions.

In hydatid cyst of the brain, optic neuritis is frequent. In aneurism it is rare and occurs only when the aneurism is contiguous to the optic nerve or the optic tract. In hydrocephalus it is very rare. When I was an interne we had a case which was apparently a typical one of hydrocephalus and the child had choked discs, but the autopsy showed that it was a case of extensive meningitis with large effusion—a so-called external hydrocephalus which should not be classed as hydrocephalus at all.

In epidemic cerebro-spinal meningitis choked disc is rare. In tubercular meningitis of the base, optic neuritis may appear and may even precede the other symptoms of the disease, but it is rarely very pronounced. There may also be tubercles in the choroid, but they are exceedingly rare in this disease, being more often found in general tuberculosis without meningitis. In syphilitic meningitis the choked disc is slower in development, but reaches a more intense degree. In pachymeningitis the examination of the fundus is generally negative.

What has been said regarding choked disc in tumors of the brain applies equally to abscess, except that it is not so frequent in the latter lesion and is more apt to be limited to, or decidedly more intense, upon the same side as the lesion. It is worhty of note that choked disc may appear in caries of the temporal bone when there is neither abscess nor meningitis.

There is a certain chronic cerebritis which may sometimes simulate brain tumor and in which we frequently have choked disc.

In cerebral hemorrhage, embolism and thrombosis there is choked disc only when the lesion is indirectly connected with the optic fibers, except that it sometimes occurs as a concomitant condition and is then due to co-existing Bright's disease or artero-sclerosis. But we must remember that an apoplectic attack may be the first symptom of a tumor of the brain, due to a hemorrhage or acute softening within or around the tumor. In such a case of apoplexy we would probably find choked disc due, not to the apoplexy, but to the tumor.

You have probably seen it stated that in persons who have milliary aneurisms of the cerebral vessels, similar small aneurisms may be discovered on the retinal arteries, but this is not true, or at least if they are ever present, they belong to the rarest of clinical curiosities. What we do see occasionally are small extravasations of blood, but these are often present in patients who never have cerebral hemorrhage.

It is a curious fact that optic neuritis may appear in acute or sub-acute myelitis when there is no discoverable anatomical connection between the cord and optic lesions.

Moderate choked disc occurs in a certain percentage (said to be as high as 8 to 10 per cent) of ordinary chorea. As we have seen, it may be a symptom of simple anæmia.

One word regarding optic atrophy. At least 50 per cent of all cases of simple optic atrophy show symptoms of spinal cord disease. Charcot was of the opinion that it is always due to locomotor ataxia. It is a singular fact that this optic atrophy occurs as an early symptom of locomotor ataxia and that when it does occur, the other symptoms of the disease remain stationary or never appear. Dejerine calls these "cases of tabes arrested by blindness." Of 400 cases of locomotor ataxia from Erb's private practice 6.75 per cent showed optic atrophy. Of 178 cases collected by Growers 14 per cent presented this lesion. The latter author mentions cases in which other symptoms of locomotor ataxia did not appear until 16 and 20 years, respectively, after the supervention of blindness, but it is not specifically stated that the knee-jerks were present, and our present knowledge would lead us to infer that they were absent.

Venetian Building, Chicago.

TUMORS OF THE LACHRYMAL GLAND.*

By Adolf Alt, M. D., St. Louis, Mo.

Tumors originating in the lachrymal gland are of comparatively rare occurrence, so that the experience in this direction which may fall to the lot of any one man is not likely to be very great. In consequence the text-books, even those considered to be of the very best, give but little space to this subject. E. Treacher Collins, in his extensive report as curator of the Royal London Ophthalmic Hospital Museum, reports only one case of primary sarcoma of the lachrymal gland and adds, that adenomatous and carcinomatous tumors may also arise in this gland.

Schirmer, in Graefe and Saemisch (Vol. VII, 1, page 7, etc.), gives a more detailed description of a resume of the literature on the subject up to his time of writing, and he agrees in the main with O. Becker, who maintained that the tumors of the lachrymal gland, which before him had been described under various names, as simple hypertrophy, adenoma, adenoid, colloid tumor, sarcoma, myoma, and encephaloid cancer, really constituted only one form of tumor which he termed adenoid.

However, since his publication a considera-

* Read at the ninth annual meeting of the National Association of Railway Surgeons, held at St. Louis, April 29, 30 and May 1, 1896.

ble number of tumors of the lachrymal gland have been reported and their histology has been thoroughly studied and O. Becker's sweeping criticism is evidently not substantiated by facts. Almost every year has brought forth the report of one or more such cases in literature, and while it is true that the majority of the tumors had a partially epithelial character, as is natural from their origin, there are quite a large number of tumors on record in which the epithelial character was altogether wanting or played a very inferior role. However, we shall return to this point later on.

The symptoms of the affection usually begin with a slight swelling in the outer upper part of the orbit by which the eye is pressed out of its normal position. As the swelling increases, which is usually a very slow process, the exophthalmus increases also and the eye is pressed down, in and forward, while up and outward movements become restricted. This is usually accompanied by diplopia. Gradually the outer part of the upper eyelid is pressed more forward, its folds disappear and it appears elongated. At this time, if not before, it is possible to feel the tumor at the location mentioned, and, perhaps, to see parts of it protruding under the conjunctiva when turning the upper eyelid. It may appear solid or lobulated to the palpating finger and it may feel hard or semi soft and elastic, according to its consistency; yet it is probably impossible to make a diagnosis as to its nature from these symptoms.

As the growth goes on the lid can neither be lifted nor does it fully cover the protruding eyeball. The veins of the lid and of the temple appear engorged. If the tumor grows more rapidly backward into the orbit, it may form a shell, so to speak, behind the eyeball, and thus produce an exophthalmus in an almost straightforward direction as we are accustomed to see due to tumors of the optic nerve.

If the tumor is allowed to grow further, the exposed cornea sloughs or dries out.

During this gradual development of the tumor the patients sometimes suffer from considerable pain, others complain only of the diplopia, and this latter symptom may disappear when the eyeball is so far pressed down that the lower lid covers the pupillary area.

The only etiological factor which in the reported cases is sometimes stated is a previous injury of some kind or other to the temple on the affected side.

Aside from the danger to the eyeball by destruction of the cornea, and of blindness by atrophy of the optic nerve due to the compression of the blood-vessels, the tumors of the lachrymal gland, by their malignity, endanger the patient's life, and should, therefore, be removed as early as their presence is recognized.

In the earlier stages of their growth this may be done with the preservation of the eyeball and of vision, although ptosis may result and has in a number of instances resulted from this operation.

The removal is easiest accomplished by an incision through the upper eyelid along the orbital margin. As these tumors are usually very friable and soft, some even almost gelatinous, the removal must be done very carefully and with the avoidance of sharp-cutting instruments. It is often impossible, with the greatest care, even, to remove the tumor as a whole. Another method consists in removing the tumor from the conjunctiva after splitting the outer canthus.

Later on, when the tumor has filled the posterior parts of the orbit and the eye is lost, or when it has spread so far as to make a clean removal by the methods just mentioned impossible, it may become necessary to eviscerate the whole orbit. In such cases, however, the tumor has usually enterd the cranial cavity through the orbital fissures, and the effect of the operation can, at best, be only a palliative one.

The healing is usually very smooth and uneventful. When the eyeball has been saved, it returns to its normal position and the patient may even regain binocular vision.

As stated before, the histological character of these tumors varies greatly. It has been my good fortune to personally examine seven tumors of the lachrymal gland, three of which I have myself removed and reported in Knapp's Archives and the American Journal of Ophthalmology. I have of late again studied my specimens very carefully and with the following results: Five of the tumors may be considered as being to some extent of an epithelial character, two show no epithelial structure whatever.

Of the five tumors showing epithelial structures there is only one in which this character is throughout the tumor the prevailing one. In fact, so closely does this tumor follow the normal appearance of the lachrymal gland, that I described and published it as an adenoma. The connective tissue between the glandular structures is also increased, but not to any very large extent.

The four other tumors, which also show an epithelial character, and which in their structure seem to be very much like those described by O. Decker as adenoids, are but little different from each other. The more I have studied them the more have I become convinced that the epithelial tissue found in them must be looked upon as the remnants of the original glandular tissue, which are in places somewhat hypertrophied, but that there is hardly

any new formation of glandular tissue, and that in consequence the real character of these tumors is not that of an epithelioma or a glandular carcinoma. The bulk of the tumors is made up of myoxomatous and cartilaginous tissue, by which the glandular structures are widely pressed apart and probably have atrophied and totally disappeared in places. The epithelial tissue still found shows, as a rule, a glandular, tubular arrangement of the cells around an open lumen. There are here and there cystic enlargements, which show that some secretion has been going on while the growth progressed. In some places small colloid bodies are found, probably metamorphosed cells.

The sixth tumor of the lachrymal gland which I examined was a spindle cell sarcoma of the purest type. It consists simply of smaller and larger spindle cells closely packed with no visible intercellular substance and some round cells in the younger portions. I may state that this tumor has grown back into the orbit and produced a straight forward exophthalmus with absolute abolishment of the motility of the eyeball. The patient died later on of multiple spindle-cell sarcomata in all important organs.

The last tumor of the lachrymal gland I removed was so soft that when on incision the thin capsule was opened the contents oozed out as a granular sticky mass. As the forceps could nowhere get a hold of it, I had to squeeze it out before I could thoroughly remove the capsule. It proved to be a chondrosarcoma. There is not a trace of glandular tissue to be found in this tumor. The only other tissue it contains is here and there a microscopical spicula of bone. There are also some colloid bodies in this tumor.

The number of tumors of the lachrymal gland here considered is, of course, not a large one in itself, although not so small when compared with the whole number of cases reported in literature. Yet, with the exception of the case, which I consider to be an adenoma, the remaining ones are chiefly characterized by connective tissue formations, not by an epithelial structure. I do not think, therefore, that I am wrong when concluding that the tumors of the lachrymal gland very frequently take their origin in the interstitial connective tissue and only in the rarer instances are truly epithelial in character.

Lymphoma, lymphadenoma, tubercular tumors and chloroma of the lachrymal gland, as have been described in a number of instances, I have not had an opportunity to see.

Dr. Nicholas Senn was unanimously elected president of the American Medical Association as the recent meeting at Atlanta.

The Location of Foreign Bodies in the Limbs by Means of the Roentgen Rays.

An instrument has been devised for this purpose by E. P. Hershey, C. E., M. D., of Denver, Colo., made from an ordinary T-square, the center being sawed through from above downward, and grooves made in the wood from the center to one side vertical to the center line. Within the portion sawed out was placed a piece of copper wire accurately fitting the space, and fastened within the grooves, made vertical to this wire, were placed fine pieces of German silver wire, at a distance of one inch apart.

The skiagraph taken by Lacombe and Johnston, and developed by Williamson & Haffner, shows the result obtained. The dark object being a crushed bullet, and below is to be found a pin, both pressed into the flesh and placed under the arm farthest away from the source of light. The most striking point of interest is the fact that the bullet is clearly shown through the bone, as the radius lay between the bullet and the source of the rays.

It would be useless to locate a bullet by means of the X-rays unless there was a positive means of locating the foreign object. With this device any object may be located with unerring accuracy.

From experiments tried upon the chest and abdomen, there is no doubt but that within a short time foreign bodies may be located within them, and with the same instrument located to a nicety.

Massage in the Treatment of Sprains and Bruises.

The Revue Internationale de Médecine et de Chirurgie for January 25 contains an abstract of a paper which was read by Dr. Krafft of Lausanne, before the Société Médicale de la Suisse Romande. Dr. Krafft, says the writer, reported a hundred and three cases in which he had employed this treatment with excellent results. He stated that a careful toilet should be made of the region to be treated, and that the hands should be rubbed with a one per cent solution of corrosive sublimate in glycerin, so that they may slip easily over the skin and thus prevent irritation. Before beginning massage a cold douche should be applied locally; afterward prolonged effleurage is begun and continued by simple friction, which is made more energetic when following the course of the blood. Other manipulations, he said, such as kneading, were completely useless in cases of recent accidents. After massage, active and passive movements may be made. By this simple procedure, said Dr. Krafft, very satisfactory results might be obtained.—New York Medical Journal.

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THAT MICROBE OF OLD AGE.

Microscopic lies are not always little lies. They are the gilded fiction of bacteriology coming from a universe of infinity of unimagined minuteness and an incomprehensible multiplicity of living factors. A microbe is like man. He is a connecting link between a material universe and an unknown infinity of life's immateriality.

The lunatic and the microscopist are expected to have an unlimited imagination. One see worlds through his mind's eye, while the other searches with imperfect aids for the boundary of an infinite space; there are worlds and worlds which dazzle the field of the microscope and are as unknown as are heavenly planets.

We have heard what the man thinks of the microbe, but the illumined field of the slide will not tell us what the microbe thinks of the man. We are inclined to believe that if man continues to make microbes possessing the idiotic function of what here follows, the microbe's opinion would be justly and germfully severe. Here is a part of an editorial upon the microbe of old age taken from a daily paper. It has been said that the next thing to a very good joke is a very bad one, but this one carries out Milton's definition of the sublime—that which is palpably obscure:

"Bacteriology is a great science, and during the past twenty years has developed with amazing rapidity. Of late, however, there seems to be a tendency on the part of the investigators to construct a 'microbe theory.' In this they have been so successful that theory is now far outstripping our actual knowledge of cause and effect as applied to these so-called 'germs.'

"One school of European bacteriologists are willing to stake the reputation of every student of the science from Bastian and Pasteur down to Johnson of Kansas that bald-headedness in the human species is caused by the ravages of a microbe which they have called the 'bacillus carnivorax.' Its discoverer, a Frenchman by the name of Saymonne, also professes to believe that drunkenness is contagious, and that the 'microbe of alcoholism' will eventually be discovered. The microbe of insanity is even more than suspected of being an 'undiscovered reality.' The air surrounding angry mobs of men is also said to be filled with microbes that will, upon being inhaled, almost instantly convert an onlooker and make him believe that the object of the crowd's wrath should be exterminated.

"In short, there is no end to the fancies which imaginative microbe theorists can conjure up.

"Ridiculous as the majority of these theories are, there are dozens of investigators of international reputation who can expound such doctrine by the hour and bring excellent arguments in proof of what they say along their special lines."

Here is potted wisdom. Ignorance is the wet nurse to this germ theory. Here is progress; these are living moments, but it is an awful scale in progress between that bald-headed bacillus called the "bacillus carnivorax" and man. Ponder on that contagious bacillus which produces drunkenness called the "microbe of alcoholism!" We thought that it was a barkeeper, not a microbe. Again, that "undiscovered reality," the "microbe of insanity." Then it is not oppression which makes wise men mad but microbes. Last but not least, that hoodlum microbe causing mobs to act with effect on all men concerned.

Thank heaven the force, influence and the active consideration of self and other matters will debar these new germ theorists from discovering the microbe of a real actively engaged cyclone or a busy earthquake. The bacteriologist who tries to discover the mi-

crobe of a bursting steam boiler will blessedly and fatefully leave his researches incomplete. We trust that close contact will be necessary for the discoverer of the microbe of exploding dynamite. Telescopes in this case would be efficient in discovering his remains.

THE EXTREMES OF SHOCK AS MANIFESTED IN RAILWAY INJURY.

A Retrospection.

Nordau says: "Egotism is a lack of amiability, a defect in education; perhaps a fault of character, a proof of insufficiently developed morality, but is not a disease. The egotist is quite able to look after himself in life and hold his place in society; he is often, also, when the attainment of low ends only is in view, more capable than the superior and nobler man, who has inured himself to self-abnegation. The ego maniac, on the contrary, is an invalid, who does not see things as they are, does not understand the world, and cannot take up the right attitude toward it."

We have always viewed retrospection as a more or less harmless by-play of egotistical thought, with just enough of the "I" in it to give it individuality; besides, there should be permitted in the rehearsing of past experience a liberty of style not generally permitted in scientific communication. Basford may be correct, when he says: "One who uses many periods is a philosopher; many interrogations, a student; many exclamations, a fanatic." Again retrospection, to make it truly interesting, should be more or less altruistic; the "I" or ego should add to the true condition of others. The story of the suffering of man should always aim to interpret the virtues and defects of others, and while the writer may extol the virtues of others, he unconsciously shows his character in the detail. For Froude says: "The essence of true nobility is a neglect of self. Let the thought of self pass in and the beauty of great action is gone like the bloom from a soiled flower.'

Experience, after all, is but "retrospect knowledge," and gives us the truest ideas of life and man and more completely adds to the knowledge and wisdom of others than to ourselves.

Reviewing life, as a doctor, for the past thirty years, and as a railway surgeon for twenty-two years, we find that memory, instead of being obtunded by a continuous repetition and monotony of occurrence, seems the more acute. Thinking of the many people attended, the harrowing scenes encountered, the great suffering, the multitudinous forms of pain, the dire and excessive mutilations of the human body, and the constant presence of sorrowful, pathetic and dramatic deaths, Prior's lines have come to mind more than once:

"Who breathes must suffer, and who thinks must mourn,
And he alone is blest who ne'er was born."

Man's life at best is uncertain and particularly so the vocation of a railway employe. It is very brief at the longest and very troublesome in its most favored conditions. But particularly so with the employe, who is surrounded by ponderous moving power; by the by-play of uncertain footing and the paralyzing, forceful action of gravity. All of nature's forces are at times arrayed against him; darkness, fire, storm and deceitful surroundings; morbid mental conditions, the criminality of bad men, the abberrations of time, nature, place, and the uninterpretable actions of Providence. Hence, more keenly than many in other vocations, we naturally view life as the most uncertain of all things, and simply for the reason that in a long and active career we have seen death come so suddenly, so rapidly, so unexpectedly, and in such appallingly shocking forms as to debar the possibility of the exercise of anything like normal and unruffled thought and explanation. Within a few minutes we have seen men, full of bouyancy, hope and strength, changed into a mangled mass of inanimate, discolored bone and flesh, an absolutely appalling change from a condition of force, power and effect to a gross materiality. The railway hospital surgeon is under a constant tension; every element of humanity and feeling, every element which makes him turn to inner consciousness is almost continuously rife. To anyone having experience in the severer forms of railway accident, shock, profound shock, or, as it has been called by some, "traumatic delirium," that benumbing, unknown quantity is very familiar. For constantly, the most tragic and soul harrowing element of his life is depicted in the results of shock.

We believe that the derivation of delirium,

curious as it is, comes from de, which means from, and lira, which means a ridge between two furrows; a quaint, but suggestive derivation. These two furrows to us represent life and death and the ridge the mutilated man between, and certain it is that the separation between these metaphorical furrows is only too oft marked not only by hours, but by minutes and seconds as well.

The history of railway accidents shows that they rarely come with a mild and placid aspect, there is eternally an element of shock to all concerned, which is constantly produced in consequence of the immense difference between the effect, intensity and result. While some competent authority has seen fit to describe the condition, as "traumatic delirium." We understand delirium to mean, "a state in which one's ideas are wild and irregular and unconnected —mental abberration—strong excitement, wild enthusiasm, insanity, frenzy, madness." Excitement there may be in these cases, but there is in the most pronounced cases, no mental abberration, and hence we would rather use the expression shock than to characterize this condition as one of delirium.

We desire to say that in spite of the caption of "traumatic delirium," the words of Dr. William Hunt, senior surgeon, to the Pennsylvania hospital, Philadelphia, contained in a contribution to Ashhursts' International Encyclopædia of Surgery, have given a most classical description of this condition, and we take pleasure in quoting from him. He says:

"There is a rather rare form of immediate traumatic delirium, which, nevertheless, must be more or less familiar to every surgeon of a great accident hospital, or to those who are in any position, as upon the battle field, where they become familiar with sudden and severe casualities. Delirium might appear to some to be a misnomer, for the characteristic is that every word and idea are perfectly coherent. There is great exaltation of mind, but an utter want of appreciation about the injuries. Trauma of the spine has been involved in the crush and the line of communication of the brain has been cut off, but this is not necessarily the case. There is no collapse at first; the skin has its normal temperature, the pulse is full and rather frequent, the face may be more flushed than natural, the eyes bright and the expression good. The surgeon enters a ward some morning after a terrible accident has occurred, and finds that a victim of this kind has just been brought in and laid upon a bed. He is at once recognized by the patient as one in authority. 'How are you, Doctor,' he says in a high voice, 'what have they brought me here for. I am not hurt! No sir, look at that!' And out goes an arm with the force of a prize-fighter, delivering a crusher. 'Look here!' And he tries to lift a leg, which his sensorium falsely tells him he has done, although his expression may indicate a vague and passing doubt. 'Why, there is my wife! Molly, what are you doing here? Don't cry, what are you crying for? I'm not hurt, go home to the children and tell them I'll be there to supper, and at the mills to-morrow! Won't I, Doctor? Go home!' Soon this great tension gives way, collapse comes on and by night the patient is in another home than that in which he promised to be. I have never known such a case to recover. With all its coherence, with every intellectual and perceptive process correct, as far as external matters are concerned, every word and thought as to other persons and objects right, everything as to himself wrong, how are we to classify this state, except as one of delirium? Important questions might arise as to the testamentary capacity of such persons; from what I have seen and described there is nothing in their condition inconsistent with full ability to direct the management of their estate and effects."

Yes, we fully agree that every element of perfect mentality is present. For many years we have seen this, and can bear testimony to the fullest detail of the truthfulness of this description as far as it goes. Let us carry out the description a little further. After the crushed and mangled patient lies there a while, and still viewing everything with a quick and alert eye, he suddenly says: "Give me a drink, raise me up, give me a little air! Oh! but that water was good, give me another drink!" As we notice him we find that his face is becoming blanched, his pulse quick and weaker, big drops of perspiration hang upon his brow; the alæ of his nose begin to move and vibrate with every breath. His face now turns more brilliantly pale, almost phosphorescent. His voice has now a slight husky tone, he suddenly and without any seeming effort spews out of his mouth the clean, uncolored water he has just taken, and with each attack of emesis his pulse becomes more feeble and intermittent. "Give me more water," he calls, "that's good, thank you." Memory is now slightly touched. "Did you give me that drink? Please give me another." Again emesis stops his utterance. "Oh, for God's sake turn me on my side, my back is killing me, give me some

more water, quick!" Again emesis occurs. "My God, I will die unless I can turn over, lift that leg, oh, that does not do any good, give me some more water! Oh, my God, how that leg hurts, raise me up, more water please!" And then emesis again. And now suddenly an almost instantaneous change comes over him, his bright and brilliant eye, profoundly intense in expression, seems dull and the alæ of the nose move with rapidity, when a sudden spasm seizes the injured man. He slowly turns his head, with tense and rigid muscles, to one side, his breathing becomes shallow and rapid, and the pulse has stopped. With a long, deep gasping breath, death has ended his life, his face partially buried in the pillow.

Delirium, or no delirium, we certainly believe that a great majority of these cases, under the influence of profound shock or call it, if you will, traumatic delirium, have the full, free and unruffled use of good sense, and are competent to decide any question influencing their material interests or regarding the disposition of their material effects. We have truly an exaltation of mentality, but the brain still lives, seemingly superior and paramount to the physical condition, and acts with lightning-like celerity, glowing with an intense excitement. Again, we not infrequently find in grave and severe injuries that a plainly manifest condition of delirium does exist, verging upon insanity. In one case where a truely religious catholic was hurt, immediately following his injury, a wild traumatic delirium made itself manifest. He acted entirely different from what his nature and habits would have indicated. He not only cursed doctors and attendants, and used the most foul and profane language, but cursed and damned the priest who sought to give him consolation. Again, we have seen them under the influence of shock in almost a maudlin condition. A man who had both of his thighs crushed was full of laugh and inanity; he leeringly, foolishly and idiotically laughed at the doctors and when the priest came he said to him: "I'm a railroad man, won't you forgive me?" This was the only sentence he would utter. He would laugh and wildly turn his eyes and repeated as long as he could see the priest, the words just quoted. Again, in one case we have seen almost complete and perfect placidity of mind, no excitement, no unusual appearance of the countenance, and had a sheet been so placed as to cover him from his neck down, one surely would have thought that the patient was simply comfortably resting and not a fatally injured and dying man. Both of the man's lower limbs had been crushed, nearly up to the pelvis. When we came to his side he said with the utmost coolness and in an unruffled voice: "Doctor, what do you think? Will I get well or not?" We were compelled to say that we thought he would die, shortly after which he turned his head and coolly viewed the attendants and said: "I asked this question of the doctor, because I knew that he would not lie to a dying man; now I know that I am bound to die." And he did not survive fifteen minutes after the announcement was made to him. From our earliest experience in treating railway men, with grave and fatal injuries, we formulated this opinion: That in spite of traumatic delirium or intense shock, almost every man (unless his brain be injured), who dies under these conditions, shows a pronounced individuality, constantly present, the peculiarities of the individual ever manifest. There is no classical description which will hold in all cases of either so-called traumatic delirium or profound shock. The brave man, the sensible man is manifest as such in shock; the coward, the fool and the villain almost always indicate the peculiarities of their mental condition (with an uninjured brain), according to the predominating characteristics of mind. We have seen all the philosophy manifest that man is capable of manifesting, and that where we would never have suspected its existence. We have seen the dread and terror manifested among the culpable and guilty, the placid death of the believing Christian, and the uncertain mental elements of the superstitious. Death to the surgeon upon the railway always presents the predominant characteristics of the individual, just as in life, with the exception of a higher moral tone which is almost invariably manifest in the presence of death.

An Englishman, who had been noted for his cool, calm, clear judgment and non-combative disposition, even under the influences of stimulants, was caught between the draw-heads of passenger cars, prior to the introduction of the Miller platform and coupler; after the accident he spat up a mouthful or two of scarlet arterial blood, and was conveyed to his home in a dying condition. Everything indicated the near

approach of death and his wife was so informed. She implored us to announce the fact to the dying man and to ask him whether or not he did not desire the presence of a priest or minister. So accordingly, we approached the patient and detailed the message as requested by his wife. He turned slowly and looked up, and after a moment or two of thought said: "Doc, tell the Missus to come in here." She was summoned and he then said: "Missus, have I not always followed out my religion?" "Why, yes, you have," she said, "but in your own peculiar way of believing. Why, Doctor, he believes in the Golden Rule, that is to do unto others as you would have them do unto you. He has invited into this very house mean, low and dirty dogs, who have shamefully wronged him, as though these men were good as angels, simply to return good for evil." "Ah, there, Missus," said the dying man, "that is neither here nor there, I have clearly done my duty. Now, Doc, I would like to ask you this question: If you had a business transaction and you could settle it with yourself and the other party better than in any other way, would you call in a third party? Well then, Doc, and you, too, Missus, what is the use of my calling in either priest of preacher when God Almighty and I can arrange our differences better than anybody else?" And with this opinion he died.

Again, there was a kind of nondescript character, who was a brakeman. He had red hair, a freckled, dingy face and a divergent strabismus, yet a head full of brains. When at work he was all work, devoted to discipline and very industrious until pay day came. When he had the accumulations of a month in his hand life to him became a continuous spree. When he again returned to duty, no one was more intelligent and effective than he. Being pleased with his bright, cheery, witty and intelligent character and his quaint, unique looks, we took a fancy to him and employed him upon one occasion to act as nurse to an injured man. At that time prescriptions were given upon a neighboring druggist. Being much engaged in attention to other cases, we neglected to notice the case in question and sent an assistant, and we both neglected to ascertain the quantity of brandy which was being used. Upon calling at the drug store, the druggist said: "Doctor, you certainly have not ordered all the brandy which this injured man is using." We then casually asked him how much brandy they had obtained within the past thirty-six hours. "Why, sir," said he, "they have used nearly $18 worth of brandy, and your red-headed nurse is thoroughly soaked with good drink." Upon going to see the patient, we found that both patient and nurse were thoroughly drunk, and in rather severe and forcible language dismissed the nurse and employed a new man. One day in going through the hospital, after having been absent for some six or eight days, whom should we seen in a bed in the ward, but the pale, pained and wan face of our old and ill-behaving nurse. Looking up plaintively, he said: "Doctor, I have prayed for you to come, they don't seem to know what is the matter with me, and I believe that I am near unto death." In reply to inquiries he said: "I was standing in the L yard close to the platform, not thinking, when the engine struck me. I was caught between the platform and the engine. I felt my hip bones crush in. I dropped down in a dead faint. I know that something is wrong here, Doctor, I can hear the grating myself when I move." Upon examination it was found that he had sustained a fracture of the pelvis, with laceration and rupture of the urethra and urinary infiltration had already taken place. He was told that his recovery was doubtful and asked if he had not some friend or near relative whom he desired to see. He said: "Doctor, I came from a good and respectable family. I am what you call the black sheep of that family, but I have a sister who lives in Maine. She is as good and pure as an angel, and as sensible as Solomon—send for her." She was accordingly sent for, and when she came we found a real pleasant, common-sense, good woman. The patient was now approaching his end, and she was so informed, when she earnestly begged us to ask him whether or not he desired religious consolation. We asked him in her presence. He turned his head and looked up at her and said: "Sis, whatever Doc orders, by God, I will take."

Dr. C. A. Smith, chief surgeon of the St. Louis & Southwestern Railway, with headquarters at Tyler, Texas, has commenced a rather extended scale of bacteriological investigations concerning the plasmodium malariæ. His department is thoroughly well equipped for such work.

Extracts and Abstracts.

The Question of Position in the Treatment of Fractures of the Lower End of the Humerus.

The following paper, by Charles A. Powers, M. D., of Denver, Colo., surgeon to the Arapahoe County Hospital and consulting surgeon to St. Luke's Hospital, was read at a meeting of the Denver and Arapahoe Medical Society, March 10, 1896. It is such an important clinical contribution that we reproduce it entire:

Until recent years there was but little difference of opinion regarding the position in which the elbow should be placed in fractures at the lower end of the humerus; the right angle was unanimously advised and employed, and this for the reason that the arm was in the most useful condition possible in case ankylosis ensued. The position was classic, and the injunction to begin passive motion at an early date in order to prevent ankylosis was faithfully followed. In 1880, however, Dr. Oscar H. Allis of Philadelphia, in a most careful and scientific essay, called attention to the change in the axes of the arm and forearm which may take place when the outer condyle slips down or the internal condyle is displaced upward, resulting in a deformity to which the term "gunstock"[1] is applied. For the avoidance of this Dr. Allis recommended that the forearm be placed in a position of extension. He also strongly emphasized the important principle that no passive motion be made at the elbow until union should be complete. This latter proposition, I believe, admits of no debate in the average case; passive motion before consolidation of the fragments leads to rather than avoids ankylosis. But to the contention that the position of complete or nearly complete extension should be employed in fractures entering the joint, I shall ask your attention, and I shall endeavor to demonstrate to you that the position of safety is that of flexion and that this position is attended with sufficiently satisfactory results to warrant its being retained by the average practitioner of medicine.

In order to bring before you the arguments of those who favor complete or nearly complete extension I quote from a valuable paper read by Dr. John B. Roberts of Philadelphia before the American Surgical Association[2] in 1892. Dr. Roberts said: "A surgeon who fully realizes the probability of impairment of the carrying-function in these fractures can, without doubt, treat them equally well in either the flexed or the extended position. Accurate readjustment of the fragments and provision for careful maintenance of the coaptation will usually produce good results. Practitioners who have comparatively few cases are, however, less liable than surgeons to appreciate the probability of a 'gunstock' deformity. In the flexed position of the elbow, moreover, the deviation of the axes of the arm and forearm does not exist; hence, in this position a slight displacement of the plane of the articular surface of the humerus is easily overlooked. For these reasons the extended position is the better for general adoption, since the angularity of the unbroken arm is then noticeable, and any interference with the normal deviation is very apparent." I fully agree with Dr. Roberts in thinking that the surgeon who sees many of these fractures will obtain satisfactory results under any form of treatment which his experience and judgment may lead him to adopt, but for the general practitioner, who sees these cases but seldom, to treat them in extension seems to me unwise, and I am led to this thought by the recollection of the following cases:

Case I. In July, 1893, a boy of nine years was admitted to my service at St. Luke's Hospital, New York, with the following history: Some six weeks previously he had fallen, injuring the left elbow. Immediately thereafter he was seen by a physician, who told the parents that the elbow was broken. He put the limb up in complete extension, and applied splints, which were changed from time to time and which were finally removed at the expiration of five weeks. At this time there was little or no motion at the elbow and despite vigorous measures, the range did not increase. Six weeks after the injury, as I have said, the lad came under my care. Examination revealed the following condition: The elbow-joint was considerably thickened, especially in the region of the external condyle; the forearm was completely extended upon the arm, and could be fixed but 10°. Under an anæsthetic attempts to flex the elbow proved unsuccessful, whereupon a four-inch incision was made over the external condyle and the joint entered. The coronoid process of the ulna was found to be broken off and displaced upward and backward, lying posterior to the articular surface of the humerus, thus completely locking the joint. The fragment was removed. The external condyle was the seat of a fracture running downward and inward through the articular surface, the fragment being displaced anteriorly. The anterior surface of this fragment was chiselled away, whereupon the elbow could be completely flexed. The wound was sewn up without drainage, the elbow put up at a little more than a right angle, and an ordinary aseptic dressing applied. Complete primary union resulting, motion was begun at the end of four weeks. The arc rapidly increased and

[1] In a recent communication Dr. Allis writes that the success attained in treating these features with plastic dressings convinces him that manufactured splints held in place by roller bandages are largely responsible for this deformity.

[2] Annals of Surgery, July, 1892.

servers, but always few, which were to be regarded as pure or simple colors, all others being considered as compounds or mixtures of these. On looking at the perfectly continuous series of colors which we see in the spectrum there seemed to be no obvious physical reason for this distinction. It was, indeed, a psychological rather than a physical one. We had an innate disinclination to conceive of an infinite number of different causes for the infinite number of different sensations of which we were conscious; it was a principle deeply rooted in our reason, expressed long ago by William of Occam, whose famous Razor, "Entia non sunt multiplicanda," was employed by us nowadays as constantly in the solution of physical problems as it was by the Invincible Doctor in the division of the sophistries of Rationalism. Mr. Laws hoped to show, however, in relation to one, at least, of the theories that it was possible to cut too close with it. Many theories of color vision had been proposed during the last 200 years, some of them interesting and original, but two only had gained any general acceptance and to these the discussion would be confined. He then described the theory of Young as it was published in 1801, its modification by Helmholtz more than half a century later, with his proof of the mathematical possibility of reducing all our color sensations to three. Hering's theory was next described, mainly in extracts from his original papers, Mr. Laws considering that none of the published accounts of it in this country did justice to the simple conception, the logical development, and lucid expression of the theory as stated by Hering himself. What we might fairly demand of a theory of color vision was that it should give a reasonable explanation of our everyday experience with regard to our sensations, and also should furnish us with a trustworthy guide when the conditions were modified by pathological processes. As it was impossible for him to discuss all the phenomena in the light of these theories he would make the appeal only to an experiment made for us by nature, namely, the condition of congenital color-blindness. Of this Mr. Laws considered that practically only one type existed, admirably described in Dr. Pole's account of his own case; that other types had been described was due to the attempt to make the facts of observation fit with an erroneous theory; the rare cases of monocular color-blindness were quoted as highly conclusive on this point; finally, the verification was at the hand of each one in the color-blind zone of his own retina. He summed up the evidence from color-blindness as showing that whenever there is a diminution of the number of our color perceptions it is not one that disappears, but always a pair of complementary colors. Here was the reason that the trichromic theory of Young failed—it was not in harmony with the essentially paired character of our color sensations. Further examples of this character were given in the phenomena of successive and simultaneous contrast, and it was pointed out that we have only to look at a color in order to call up the sensation of another as definite and (under proper conditions) as brilliant as the former, and having the constant psychical character that it is the greatest possible contrast to the former that our minds can conceive. The physical relationship of the two was such that if the spectrum be divided into two halves, and the more refrangible be superposed on the less refrangible half, then color by color and shade by shade the one will neutralize the other and a colorless band result. The dividing line between the two halves corresponds to the neutral point of the spectrum of the color-blind, and thus the same relation holds for their spectrum as for ours. This very remarkable relationship had, he thought, had less importance attached to it than it deserved. The three pairs of antagonistic chemical processes of Hering seemed to him but crudely to account for the facts. Might there not be a deeper cause for it? Much light had been thrown of late years on the relations of light and electricity originally by Clerk Maxwell's mathematical development of the relations of certain physical constants into an electro-magnetic theory of light and, perhaps more strikingly, by Hertz's demonstration of the possibility of producing electro-magnetic waves which had all the essential characters of those of light. We know as little of the real nature of electricity as of that of the ether; perhaps, indeed, they were one and the same thing; but one of the most characteristic properties of the former was its power of producing a condition of polarity, or the separation of equal and opposite energies, in matter under its influence. Might not this furnish a clue to the intimate nature of the action of light on the retina and so lead to a completer theory of color vision that we yet possess?—Lancet.

Hæmostatics in Hæmophilics.

Dr. H. C. Howard of Champaign, Ill. (Amer. Jour. of Surg. and Gyn.), has for twenty years used hypodermic injection of a saturated solution of tannic acid around the seat of the bleeding. Dissolve the acid by aid of heat. Make from three to six injections around the seat of the injury, using a saturated solution as hot as can be stood. Also inject hypodermically one-twentieth of a grain of strychnine and repeat every two hours if needed. Strychnine by its influence upon the vasomoter nerves usually checks bleeding in a short time, but when the amount of blood lost is considerable it is best to adopt the above method of local treatment.

Notices and Reviews.

The Principles of Surgery, by N. Senn, Ph. D., LL.D., second edition, thoroughly revised; illustrated with 178 wood-engravings and colored plates. Philadelphia. The F. A. Davis Company.

We have often thought that books, like men, were interesting in proportion as they were free from egoism. The unselfish devotion to merit, the appreciation of work done by others, along with rare selective power and breadth of view, yet with splendid condensation of existing literature, certainly makes this work of Dr. Senn's a masterpiece. The principles of surgery can be made very dull and uninteresting reading and in our earlier life in medicine we keenly appreciated this fact, until we became acquainted with Van Buren's Principles of Surgery. The work under review is certainly a splendid effort, and its worth and charm come through the fact of common-sense arrangement, keen devotion and appreciation of the masters, impartial yet enthusiastic views, and a capacity in the direction of generalization. It is pre-eminently a student's book, and it must be a dull man, indeed, who can take Senn's Principles and not become interested. The chapters on regeneration are now classical and we will never forget our first pleasure in reading them. They contain almost the entire basis or ground work of surgical pathology. Generalizers are born, not made; individualizers are in the nature of a fungous growth. Time is their fate; they bloom and gush for a day, but the masterful generalizer, the establisher or enunciator of principles, is a master endowed from the beginning, and Senn is one. The chapters on regeneration are followed by one on inflammation, wherein is treated the plain and easily understood difference between regeneration and inflammation. Then comes a chapter upon pathogenic bacteria, which includes classification and multiplication of bacteria, along with an extensive life history of bacteria forms. The chapters upon septicæmia, pyæmia, tetanus and surgical tuberculosis are especially fine and will bear repeated reading. We may be prejudiced in favor of this book, but certainly think it is by far the best book of this character which we have read, and this second edition, with its many valuable additions, makes it of still greater value. It has been of rare educational value, and we believe that it will continue so.

The International Encyclopedia of Surgery. A Systematic Treatise on the Theory and Practice of Surgery, by Authors of Various Nations. Edited by John Ashhurst, Jr., M. D., LL. D. In seven volumes. Vol. VII, Supplementary Volume. Wm. Wood & Company, New York, 1895.

For many years we have thought that this encyclopedia was the most comprehensive and valuable presentation of surgical knowledge. Any library will certainly be lacking without it. To the honest investigator it will become apparent that the amount of individual thought and work is enormous. It is not a mere compilation, but a well-condensed, original work. As to the making of books there is no end, but of such works as this but few have ever been produced. It is invaluable in the study of the history and progress of surgery. We have consulted it for years and it has added to our capacity, and endeared itself to us for the reason that it is full of original thought and experience, and not a vapid rehash of oft-told things.

This supplementary volume (Vol. VII) contains articles to the number of fifty-five, by forty-eight different authors, covering almost the entire field of surgery, and is indeed a splendid work. We were especially pleased with the following chapters: Anæsthetics and Anæsthesia by Dr. A. I. Bouffleur, a thoroughly condensed and invaluable chapter upon a dangerous element in the surgeon's calling. Its condensation is masterly. Dr. B. Farquhar Curtis certainly possesses a well-ordered mind, one which comes easily and readily to lucid condensation. His article upon tumors is a model in its way, and will well pay for its perusal. Injuries of Bones, by John H. Packard, M. D., is what we would expect from this author, a masterly exposition of the subject. Surgical Diseases of the Head, by W. W. Keen, M. D., is in our estimation one of the best condensed and most practical articles which it has been our fortune to read. Joseph Ransohoff, M. D., gives a chapter on Injuries and Diseases of the Neck, which, while condensed, is pre-eminently practical. We have not time to individualize, but certain it is that the makers of this book made better than they knew. This supplementary volume,

for one who has the previous six volumes, brings surgery up to date and completes an invaluable classical work. We may be prejudiced but certain it is, we look upon Ashhurst's Encyclopedia as one of the most valuable works ever written. O.

Diagnosis and Treatment of Diseases of the Rectum, Anus and Contiguous Textures. Designed for Practitioners and Students. By S. G. Gant, M. D. The F. A. Davis Company, Philadelphia, 1896.

We are not unmindful of the fact that "criticism is a study by which men grow important and formidable at very small expense." All men assume the capacity to criticise, while few possess it, and they render manifest that which they should conceal, and that is their inability for the work they attempt. The average criticism in an average medical journal does not arise even to the average intellect possessed by the writer. Chimmie Fadden is by far a more interesting critic, and a more truthful and conscientious one than the critic in many medical journals.

Here is a book which offers, in consequence of many faults in diction, an unlimited field for the ranting critic to make his own grandeur apparent, while pulling down the author.

We are free to confess that these very faults make it valuable, for it certainly fulfills the purpose for which it was written. It is a plainly written, thoroughly instructive book, and the active practitioner can find in it digestible pabulum. It teaches and teaches well the very things a practitioner wants to know, and he is not compelled to wade through masses of theory, but finds in most unpretentious language the facts he wants to know. We predict that this book will have better success than many whose verbosity and pretension lead us to expect more than we get. The reverse is true in this book. We get more in an easy way than in almost any other book which we have read in a long time. The execution is excellent, the type is good, and the illustrations all that could be desired. The matter is condensed, readable and instructive and does not confuse one at the start by exceeding bulk. We are free to confess that a Falstaffian looking volume now seems to mean just so much sapped vitality. O.

Dr. J. F. Valentine, chief surgeon of the Long Island Railroad, is organizing a hospital department for the employes of that corporation.

Notes, News and Personals.

Dr. H. H. Mudd, Dean of the St. Louis Medical College, has been appointed consulting surgeon of the St. Louis hospital of the Missouri Pacific Railway.

Dr. T. O. Summers, editor of the St. Louis Critic, has been appointed Bacteriologist and pathologist to the hospital department of the Missouri Pacific Railway.

There are now thirteen railway systems in the United States having hospital departments in operation. These departments have twenty-five well-equipped hospitals, treating annually over 165,000 patients.

Dr. Donald Maclean of Detroit has resigned and Dr. Truman W. Miller of Chicago has been appointed to succeed him as chief surgeon of that portion of the Grand Trunk system west of the Detroit and St. Clair rivers.

The staff of the St. Louis hospital of the Missouri Pacific Railway attended to nearly 120 people, more or less injured, following the cyclone of May 27. All of this attention was supplied gratuitiously, for in such calamities as these, selfishness is an after consideration.

Dr. E. F. Yancey, chief surgeon of the M. K. & T. Railway, has just had constructed at the Sedalia Hospital a new and thoroughly equipped operating arena. This magnificent hospital has a capacity of 85 beds and the surroundings are very pleasant. It is situated in the middle of a splendid grove of trees, with all the air space which sixteen acres can give. Certainly every want which a patient can have can be supplied.

Dr. W. F. Jamieson of Palestine, Texas, chief surgeon of the I. & G. N. hospital department, has returned from New Orleans, where he has been attending various clinics. The doctor has brought his department to a high state of efficiency. The Palestine Hospital is a splendidly equipped and carefully constructed brick building with a capacity of about 65 beds. It is beautifully situated amidst rare plants and exotics and other pleasant surroundings.

The Missouri Pacific Hospital Department treated, through its consulting staff of specialists, the following number of patients during the past year: The oculists treated 452 patients and these patients made 3,526 visits to them; 42 operations were performed by the oculists. The laryngologists treated 463 patients, with 1,290 visits and 205 operations. The aurists treated 255 patients, who made 566 visits and had performed upon them 18 operations. The dermatologists treated 208 patients, who made 402 visits. The neurologists treated 168 pa-

tients, who made 218 visits. The total number of patients was 1,546; the number of consultations, 6,011, and the number of operations 265.

Dr. C. M. Daniels of Buffalo, chief surgeon of the Erie Railway Company, has submitted to the employes of that system a most excellent plan for the organization of a hospital department. This plan possesses every element calculated to satisfy the most exacting. It is, indeed, a positive advance in the formation of a hospital department, and by its pure merit will satisfy everyone.

Dr. P. F. Vasterling, senior house surgeon of the St. Louis Hospital, Missouri Pacific Railway, has accepted the editorship of the Railway Surgical Department of the "Medical Fortnightly" of St. Louis. This is an excellent selection and will certainly redound to the profit of the "Fortnightly," as Dr. Vasterling is rich in railway surgical experience, and moreover an enthusiast in his profession.

The Columbus, Sandusky & Hocking Railway has organized a surgical staff and divided the system into surgical divisions. The following surgeons comprise the staff as now organized: Sandusky, Dr. C. H. Merz; Bucyrus, Dr. J. A. Chesney; Marion, Dr. A. M. Crane; Delaware, Dr. E. M. Semans; Columbus (chief surgeon), Dr. R. Harvey Reed; Basil, Dr. O. P. Driver; Fultonham, Dr. C. Z. Axline; Corning, Dr. C. B. Holcomb; Hemlock, Dr. B. F. Barnes; Shawnee, Dr. J. D. Axline; Zanesville, Dr. J. G. F. Holston; Cannelville, Dr. G. B. Trout; Gloucester, Dr. A. J. Crawford.

The Plant system has also fitted up several hospital cars, which are scattered along the road at division points. In case of an accident one of these cars is dispatched to the scene at once, and the wounded are cared for properly and immediately. An operating room in the car is fitted with a glass-topped table and all the appliances for performing aseptic operations. There is a consultation room and a larger apartment, fitted with cots and hammocks, in which the injured may be conveyed safely and comfortably to the railway hospitals.

It is proposed to have these hospital cars so located that one can be sent to any point on the road within two hours. A supply of stretchers is carried on each of the hospital cars, on which the wounded may be removed from the wreck, and each car will have accommodations for more than a dozen sufferers. The intention of Dr. Frank H. Caldwell, the chief surgeon of the Plant system, is to use the hospital cars chiefly to transport the wounded to hospitals, and the operating-room will be used only when a delay would be dangerous to the patient.

Miscellany.

The Association of Military Surgeons.

The sixth annual convention of the Association of Military Surgeons was held in Philadelphia, at the Broad Street Theater, May 12. Among the members of the association present are the following: Major Thomas J. Sullivan, Chicago; Major J. V. R. Hoff, Governor's Island, N. Y.; Major Thomas Rockwell, Rockville, Conn.; Colonel L. B. Almy, Norwich, Conn.; Brigadier-General George Austin Bowman, Woodstock, Conn.; Captain J. Pilcher, Columbus Barracks, Ohio; Major Samuel Q. Robinson, Fort Reno, Colo.; Major C. L. Seigman, Fort Adams, R. I.; Colonel C. C. Byrne, Governor's Island, N. Y.; Lieutenant-Colonel R. W. Blood, Boston, Mass.; Assistant Surgeon-General C. R. Alden, Washington, D. C.; Major L. C. Carr, Cincinnati, Ohio; Commodore Albert Gihon, New York; Major S. S. Tesson, Fort Ethan Allen, Vt.; Major V. Havard, David Island, N. Y., and Major George W. Adair, Washington Barracks, Washington, D. C.

A Case of Traumatic Ventral Hernia and one of Hæmophilia.

Mr. Garstang reports the following interesting cases in a recent number of the London Lancet:

Traumatic ventral hernia of the kind described in the first case is of very unusual occurrence—in fact, it has received little notice in our general text-books. Such a hernia, as the result of direct subcutaneous injury, may develop immediately in consequence of rupture of the muscles in the abdominal wall, the protrusion taking place through the opening made, or atrophy with resulting weakness may ensue at the point injured and a hernia develop secondarily. Examples of the former are given by Gay, Meckel and Bryant. The patient under the care of Gay had a blow from a buffer in the abdomen, and on dissection some of the viscera were under the skin and had come through a rent which divided the left rectus and left epigastric artery, the linea alba, and part of the right rectus. Included in the term traumatic, and much more common than those already referred to, are the hernia which protrude through the scar resulting from the wound made by a surgeon for the removal of an abdominal tumor or for the evacuation of an abscess, also wounds of the parietes received in other ways by stab or gunshot. We are still in a condition of uncertainty as to the exact deviation from the normal which produces hæmophilia, and the facts that are known about

it, such as its hereditary character, its more frequent appearance in the male, and also that it is congenital, do not help us in respect to the treatment of the hemorrhages which are so apt to prove fatal. It is probable that antiseptic treatment with pressure will do more for the arrest of hemorrhage in these cases than was formerly possible. When the wound suppurated and hemorrhage frequently recurred from it the attempt to apply pressure of the application of styptics only seemed to make the wound a larger one and the fever more intense. Of the numerous drugs which have been recommended for the treatment of the hemorrhages the only one which has seemed to us to exercise any control on the loss has been belladonna, applied externally in the event of large subcutaneous hemorrhages, or given internally in cases of bleedings from the mucuous surfaces. For the notes of the cases we are indebted to Dr. G. Wilkinson, late senior house surgeon.

Case 1. A boy aged fifteen years was admitted to the Bolton Infirmary on February 7, 1895, with a swelling in the left hypochondriac region, the result of an injury. He gave the history that he was carrying a bundle of dyesticks, when he stumbled and fell with his abdomen on the blunt end of one of them. On admission there was found to be a swelling about the size and shape of half an orange, midway between the umbilicus and the cartilage of the tenth rib on the left side. When the patient coughed the swelling enlarged. It could be put back entirely into the abdominal cavity, and when this was done a well-defined rounded opening about one and a half inches in diameter could be felt in the abdominal wall beneath the skin. The substance protruded beneath the skin when the patient coughed and had the knotted feel of omentum. The skin over a part of the swelling was superficially abraded. The patient was put to bed, carefully dieted, and a pad and bandage were applied to the seat of injury. On March 6 the subcutaneous rent in the abdominal wall had nearly closed, so that only the tip of a finger could be introduced, and the abrasion had healed. The patient was supplied with an abdominal belt with pad and was allowed to get up. On December 9 the patient came up for inspection. He had resumed work and discontinued the use of the belt. There was a prominent scar marking the seat of abrasion, which showed signs of cheloid growth. The rent in the muscular layers had quite closed and firm scar tissue was felt.

Case 2. A boy aged eleven years was admitted on June 18, 1894, with hemorrhage from the cheek and gums. He gave the history that he was struck on the left cheek with a cricket bat four days before admission, and that there had been continual bleeding from his gums and cheeks since. His previous history was as follows: When two years of age his tongue ulcerated and bled for three weeks; at three years of age he received a wound on the back of his head, which bled during five or six weeks; when seven or eight years of age he had a wound of the temple, which bled three of four weeks in spite of plugging, caustic, etc. There was no history of any male relative having been similarly affected. A sister aged twenty-five years had had four miscarriages and a boy who died at the age of eight months. The patient had a sallow complexion with transparent condition of skin. The conjunctiva was not unusually pale and there was no heart murmur. Tincture of perchloride of iron was applied to the wound of the cheek without much beneficial effect. Finally a silk suture was introduced and proved effectual. Arsenic and tincture of perchloride of iron were given internally and the mouth was frequently washed out with iced Condy's lotion. On July 9 the wound had quite healed. On November 28, 1895, the patient was re-admitted on account of hemorrhage from a wound of the upper lip inflicted by falling against a frame eight days previously. The hemorrhage having ceased after admission it was not thought advisable to disturb him. Free hemorrhage, however, came on in the night, which was controlled by the introduction of a silk suture. On December 23 the wound had not healed, but was slowly granulating.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate: situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address 'BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

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SHOULDER INJURIES, WITH SPECIAL REFERENCE TO THEIR MORBID ANATOMY AND DIFFERENTIAL DIAGNOSIS.*

BY THOMAS H. MANLEY, M. D., NEW YORK.

The shoulder, because of its situation, its wide range of motion and, frequently a site exposed to considerable concussive force, often sustains various degrees of violence. An impression generally prevails, that the accurate detection of the various types of trauma borne by this region of the body, is ordinarily a simple matter. Applying this statement to the more ordinary injuries, it is probably correct; but, if it be intended to include all, it certainly is an error. My own fifteen years' experience in active hospital service, wherein, traumatism of every description constituted the larger number of cases, has convinced me, that, if perhaps we exclude the elbow, there is no joint in the body, in which the diagnosis of injuries of structures entering into, or contiguous with it, is more difficult to recognize. It may sound strange, but there can be little doubt, that there are not a few practitioners who, in the whole course of their career, have never detected some of them. Paradoxical as it may seem, but it is probably true, that some may have treated lesions, the actual existence of which they have been in ignorance of. On general principles, the case was dealt with; "palmed" off as a sprain or contusion, recovery of function returning in various degrees, not so much in consequence of treatment, but in spite of it.

Through an oversight of this kind, serious consequences may accrue to the patient; and its ultimate detection, by a more cautious, unskilled diagnostician, can only result in seri-

*Read by title at the ninth annual convention of the National Association of Railway Surgeons.

ous damage to one's professional reputation, if not involve him in expensive litigation.

With a view especially, of endeavoring to throw some light on this feature of diagnosis, this brief review of the subject is undertaken; more so, inasmuch, as no text-book or other surgical work that the writer is familiar with, deals with it in detail, at this joint. The average work on bone and joint distraints, considers the subject in a manner too technical and artificial to be of much practical value, to those whose practice is exclusively surgical, or, even, the general practitioner, who frequently unaided, must promptly act and give relief to the injured.

CONFIGURATION AND FUNCTIONS.

The shoulders give lateral width, squareness and fullness to the upper segment of the trunk. Regularity in growth and development in this situation, impart that symmetry and perfection of outline, so essential to ideality of stature.

Some authors imply an analogy between the shoulder and the hip, but, on close inspection, with an analysis of structure and function, this seems very remote, if it exist at all.

The shoulder is made up of a bony framework, with two joints, and a large muscular development, resting on the lateral wall of the thorax, and swung by muscles upon the spine, and only steadied in position, by the clavicle. With their appendages, the arms, forearms and hands, their purposes being solely for prehension, and the performance of the mechanical needs of the body. The shoulders, because of their position and mobility, afford shelter and protection to the contents of the chest or thorax, and in the application of great violence, to the lateral surfaces of the body, receive the primary impact, and so diffuse or moderate it, as to often guard the skull, the spine or thorax, from serious damage. A young lady lately came under my observation, who sustained a fracture in the upper dorsal segment of the spine, from a fall of less than three feet, from a hammock, striking squarely on her back. The consequences to the spinal functions have been most disastrous. The same degree of force, sustained by the shoulder, would probably have resulted in nothing more, than a severe contusion, or, at most, a clavicular fracture or dislocation.

The shoulders, suddenly thrown inward on the body, afford great protection to the upper segment of the thorax. This provision of the economy will largely explain, why, after contusive injuries, we so seldom meet with costal fracture, above the nipple line, or the most vital region of the thorax.

Of all the articulations or joints, in the human body, the shoulder is not only the most complex, but the most perfect and powerful compound articulation, as well, considering its structural composition.

Shoulder motion or movement, involves something more than one articulation, as one might infer, by a superficial examination of the anatomy of this region.

To speak of the shoulder-joint, especially, when function is referred to, is inaccurate, and has so often led to such mistaken inferences, as to betray the unwary into erroneous conclusions, both in the recognition and treatment of injuries, over this area of the body. Full exercise of shoulder motion, always involves two articulations, at least. It is therefore highly proper and equally necessary, that we should speak rather of shoulder-joints, than a shoulder-joint; and let us hope, that in the near future, some rising anatomist, with a greater regard for a full and truthful description of structure and function, than a puerile submission to the tyranny of tradition, will come out, with such an account of this important structure, as will give to the subject such interest and practical value, as never yet has been bestowed on it.

The upper extremity is brought into immediate relation with the body or trunk, through that limited, flat articular surface, connecting above, the shoulder-blade with the collar-bone; the power, being linked with the brachial lever, through the medium of another articulation, which imparts to the arm, a great diversity of motion. Several large nerve cords pass down through the osseo-muscular structure of the shoulder, anteriorly and internally, to reach the axillary pit. Following along the same path are the two great vascular trunks of the arm. These important structures, though well fortified against exposure or injury, by a provision of the economy, yet, in the event of serious disorganization or displacement, of the osseous framework of the shoulder, can scarcely escape damage.

OUTLINE OF THE ANATOMY OF THE SHOULDER.

The shoulder is pressed backward, from the median plane of the body, braced from within, and permitted to move within a limited arc, by the clavicle.

One of the shoulder joints—the acromio-clavicular articulation—is very superficially located, being immediately under the integument. It is remarkable, because of its exclusive ligamentous composition, and its great resistance, to the application of violence. On the integrity of this joint, the equilibrium of shoulder action depends. It is a true arthrodia. In motion of the shoulder girdle, the scapula moves upon the outer end of the clavicle. As Morris puts it, "the entire scapula moves in the arc of a circle, whose center is the sterno-clavicular point, and whose radius is the clavicle" (Morris Human Anatomy, the Articulations, p. 232). Through this joint, the scapula moves on the thoracic walls, backward and forward, and without it, the constantly forward obliquity of the articular surface of the glenoid cavity, would be impossible. By its means, the shoulder can be forcibly advanced forward, on the thorax, and the combined action of the muscles of the scapula and thorax, can be brought into play, in the application of force.

Around the end of the clavicle, the shoulder moves to and fro, as a hinge, on the horizontal axis of a joint.

If the acromio-clavicular junction is signalized, by the absence of muscles, the scapulo humeral depends almost alone on them, for support and retention. The former is the passive articulation of the shoulder, and the latter the active, the one serving as the true joint, to connect the shoulder to the trunk, maintaining a steady unremitting functional action; the other, only called into play periodically, to fulfill special demands. If the scapula be suspended from the end of the clavicle, from a point devoid of any special bone support, except from underneath, the humeral head is quite equally devoid, of any direct osseous collateral support, within its investing capsule. Its chief supports are but accessory, or extra articular, as not more than one-fourth of the head of the humerus, is in contact, at one time, with the narrow, nearly flat surface of glenoid cavity. The head of this bone, then rests rather against an articular surface, than is enclosed by one. It is held up against the scapula, by muscular action, partly assisted by the long head of the biceps, immoderate forward, or upward movement, being restrained by the coracoid and acromion processes.

The capsular ligament of the scapulo-humeral joint, equal to more than twice the capacity of humeral head, is sometimes continuous with long fibers of the biceps, and by a diverticulum, with the large subacromial bursa. It may be well to note that although this ligamentous support of this joint is unimportant, with the exception of the deltoid, all the muscles inserted into, or near the tuberosities of the humerus, end in broad tendinous expansions, those coming from the dorsum of the scapula, having a dense resisting fasciæ, before they converge at the point of insertion. The shelving arch of the acromion process, affords the greatest protection, to the head of the humerus, which, indirectly, through the medium of the deltoid muscle, is intimately united with it. In sudden muscular strain, or the relaxation consequent on paralysis, the head of the humerus is prone to slide out of its cavity. After certain dislocations, following violent strains or twists, such extensive laceration of muscle, or possible detachment of tendinous fibres follows, that the reduced humeral head persistently falls away from its scapular receptacle.

The head and the greater tuberosity of the humerus contribute an important part of the shoulder. In fact, the whole architecture of this region is primarily formed, and ultimately intended to act on, support and protect this disc of bone, with the shaft and forearm below.

The articular surface of the head, and epiphyseal junction of the humerus are within the capsule, and are so well protected, as to be entirely beyond surface examination, except through the axilla, when the arm is at right angles with the body laterally, or, is forcibly raised to a plane, in the same line of axis with the body.

The great muscular leverage of the upper end of the humerus, has its principal insertion, in the apophyses or the tuberosities, which are primarily possessed of independent centers. This group of muscles serves a dual function, of imparting motion to parts beyond the joint, besides, in a large measure, acting as ligamentous stays.

The whole osseo-muscular structure of the

shoulder is a study of great interest, if we regard it from its mechanical standpoint, alone. Here we have the entire structure of support and motion of the arm and forearm, slung loosely on the walls of the thorax, without any apparent definite fixed center of support, with nothing of greater strength, than the costal bows and inflated pulmonary tissue, underneath to oppose violence, and yet, in the event of danger, or, when necessity demands it, the elastic lung is suddenly expanded, and the pendant scapular wings become fixed, as though set in steel braces. The pneumatic chamber, by some provision of the economy, not easily explained by physics, is suddenly transformed into a pedestal or base, which may receive a tremendous force of impact, through the humerus, with comparative impunity.

When the muscles are in a relaxed state, and are taken, as it were, by surprise, as in many falls, blows, etc., force applied over the lateral aspect of the shoulder, is transmitted through, the clavicle, but, when great force is applied obliquely, from before or behind, or, when notice of its approach is possible, quick muscular adjustment serves to transmit it directly to the chest walls, as well as, to the clavicle.

THE BLOOD VESSELS AND NERVES.

The nerve and blood trunks, on their course to the upper-extremity, are forced to make their way, through a narrow, movable gap, at the point, where they dip under the distal curve of the clavicle, and pass down over the first rib, to reach the armpit, where they are very superficial, and yet, well protected from their sheltered position under the arm.

Except for a few recurrent branches in the axillary space, the parts immediately above the scapulo humeral articulation, derive their arterial supply, from the thyroid axis of the subclavian.

In the axilla, the great blood trunks lie in a loose bed of myxomatous tissue, imbedded in which, are numerous lymph ganglia, arranged in two layers. Besides performing the functions appertaining to these bodies, they no doubt, serve to modify pressure on the vessels, in the event of concussion, or compression from mechanical causes.

NERVES.

The close proximity of the brachial plexus of nerves with the humeral head—being separated only, by the tendon of the subscapularis and capsule of the joint—would seem to expose it, to serious damage, in the event of dislocation, or any sudden strain on the humerus. But the inherent property of nerve tissue, to resist injury, with their free, unfettered position, enables this leash of cords to generally escape serious damage. The peripheral nerves of the shoulder, which come down from the upper conical roots, being more exposed, are most frequently affected, by an injury.

It is only in fractures, occupying the upper division of the surgical neck of the humerus, that the deep branches of the brachial plexus, as, the circumflex, muscul and spiral are severely lacerated, or contused.

CHARACTER OF LESIONS MOST COMMONLY BORNE BY THE SHOULDER, AND STRUCTURES IMMEDIATELY CONTIGUOUS WITH IT.

By some singular provision of the economy, the osteo-arthritic elements of the shoulder, are by far, less susceptible to pathological changes, subsequent to, or simultaneous with, constitutional diseases, than those in other situations. The same may be said of the neuro-vascular structures. Thus, tubercular synovitis or osteo-arthritis, at the humero-scapular joint, is a rare condition. Why this should be so, in an articulation, the center of such activity, and so near the center of circulation, while the more distant hip and knee are implicated, is not easy of explanation. We will observe, also, that, when rheumatic inflammation falls, with its greatest force on the joints, those of the shoulder more often escape, than the hip, knee or ankle. It is certainly unusual to find the shoulder locked in permanent anchylosis, by an organized plastic exudation of rheumatism, into the tendo-vaginal spaces, or, between the articular surfaces.

When one finds an acute monarticular, pan-inflammation of a rheumatoid character, at the shoulder, fixing the ends of the bones, and rendering all motion difficult or painful, in an adult previously healthy, we have good reason to suspect, the metastalic transference of gonorrhœal infection.

In quite a few, after a moderate injury at the shoulder, we may find a marked element of hysteria, with the most intense hyperæsthesia,

along the terminals of the supra-clavicular nerve.

The movements of the shoulder, are intimately connected, with the integrity and action of the lungs. This is conspicuous in the trophic wasting of muscle, and falling forward of the shoulder, in phthisis; and, the fixed position of the shoulder blade, when the pleura is distended, or, the parenchyma of the lung is the seat of extensive inflammatory invasion.

Phlegmasia of the arm, with varices or early cutaneous atrophy of the upper limb, as a consequence, of traumatic or infectious phlebitis of the axillary vein, is almost never witnessed, except, in the malignant infiltration of cancer, or, after the enucleation of the absorbents of the armpit, by the resulting scar-tissue.

Certain cardio-pathies may produce such a train of phenomena at the shoulder, as will lead the inexperienced to believe, that the axillary-artery is the seat of aneurism. Such a case once led me to suggest, a consultation with a view of deciding, on the most appropriate mode of treatment. This was ten days after the case first came to me. Now, when the patient was stripped, all the symptoms of aneurism had vanished; but, a most remarkable form of violent and painful muscular spasm remained, involving the entire shoulder and arm. Treves speaks of axillary aneurism as a very common variety (Applied Anatomy, F. Treves, p. 217). It certainly is not in this country. Not a single case has ever come to my notice. This is most extraordinary, when we consider the exposed state of the axillary artery, to various kinds of trauma.

We have no pathological state of the brachial plexus, which gives rise to any phenomenon similar to sciatica, although it would appear, from "crutch palsy," that it bears the effects of pressure, with less impunity than its neighboring blood trunks.

There is a type of neuralgia, however, which involves the brachial nerves, of a spasmodic character, producing spells of the most agonizing, exhaustive, distress, recurring after varying intervals, sudden in its onset and subsidence. It almost invariably involves the right shoulder, and not uncommonly shatters the constitution of the afflicted.

LESIONS OF A TRAUMATIC ORIGIN.

The shoulder girdle being an offensive and defensive bulwark of the body, powerfully constructed, and yet, the center of a double diarthrodial movement, is directly and indirectly exposed, to various degrees of violence.

Blows and falls on the shoulder, are of no great moment, unless the intensity of impact is considerable. When one is about to fall, or receive a violent blow, the scapular defense is immediately set up, the hand and arm are thrown out, or the shoulder is suddenly raised. or pressed forward.

Sprains, contusions and wrenches of the shoulder are common, and, as a rule, are quickly recovered from. But difficulty and trouble may come from mistaken diagnosis, or a superficial examination.

Not a few cases of fracture of the outer third of the clavicle, of the acromial or coracoid process, or dislocations of the acromial end of the clavicle, or head of the humerus, have been mistaken and treated for "sprains." And as will be shown later, the diagnosis of severe types of shoulder injuries, is by no means as simple a procedure, as is generally supposed.

Shoulder dislocations are not rarely so difficult to successfully treat, or so unsatisfactory in final results, that many highly capable, but cautious practitioners, are loath to take them in hand, under any circumstances, if it be possible to avoid it.

Clavicular fracture, so commonly the result of indirect force, acting through the shoulder, when it occurs at the interspace, between the insertions of the deltoid and pectoralis-major muscles, or, the outer third, though uniting with greater rapidity, than any other bone in the body, if we except the inferior maxilla, can seldom be so treated, so as, to entirely avoid overriding of the fragments. Epiphyseal separation within the capsule, or fracture just outside of it, in the femoral shaft, is unsatisfactory to treat, and tedious in its effect, on the functions of the joints.

About one in a hundred dislocations, of the head of the humerus, cannot be reduced, or, if they can be, will not remain.

I have witnessed two surgeons of eminence, utterly fail, by pushing the head into the glenoid cavity. One not only failed, but fractured the shaft, through the surgical, neck in the attempt.

Ten cases of unreduced humero-scapular dislocation, have been under my own notice, and

two at the clavicular-acromial joint, the two latter, having been treated as "sprains."

Modern surgery has opened the way, to the successful reduction of those cases, otherwise rebellious to manipulation, by free dissection. But, infection almost invariably follows arthrotomies, and, in any event, so many tendinous structures must be divided, and adhesions of the vessels and nerve cords are so common, that after the large wound has cicatrized, the functional result may be no better, if they are as good, as a pseudarthrosis.

Fractures through the omoplate or shoulder blade, whether they involve the spine of the scapula or not, result from direct violence, and usually do well, when there are no internal complications, as anything more, than a slight displacement is not possible.

In the lower extremity, in those railroad accidents, which cause a crunching off of the limb, the conformation of the external surface of the hip, often causes a sliding away of the joint, so that a disorganization, through the shaft above the trochanters is never seen, except, when the pelvis itself has been implicated. Through a somewhat similar arrangement of the shoulder, the claviculo-scapular slope, force is deflected away from the body, and the point of mutilation, is below the insertion of the latissimus-dorsi muscle. Thus, the humero-scapular articulation is spared destruction, though generally, the object which crushes through the limb, destroys so much of the integument above, that, in order to provide a covering for the stump, the remaining root of the humerus must be sacrificed.

MORBID ANATOMY.

Having, in a very brief and superficial manner, considered some of the grosser anatomical structures of the shoulder, their relations and functions, it now remains, to deal with some of the lesions of tissues, resulting in this situation, from the application of violent force.

A correct understanding of this division of the subject, at once elucidates diagnostic difficulties, and suggests a rational treatment. But, to deal with it, in detail, or on any systematic plan, would be to enter on a large undertaking, far beyond the scope of this contribution; therefore, nothing more, than a rudimentary and fragmentary presentation of the subject, embracing in a measure, only the principal features of shoulder lesions, which strike me, as of the greatest practical interest, will be considered, without dwelling on details with that fullness and minutiæ, which properly belong, to special works on the subject.

SPRAINS, ENTASIS, ETC.

In the most common varieties of severe shoulder injuries, the articular structures, the main blood trunks and large nerve cords, passing through the armpit, escape serious damage. The structures which suffer most serious harm are the peripheral nerves; these are overstretched or contused. The circumflex or musculo-spiral nerves, in super-rotation, or violent extension of the arm, are unduly strained, resulting in hyperæsthesia, and diminution in power in the muscles, supplied by them. In violent blows over the deltoid, the shoulder movement for a time, may be as effectively crippled, as by a fracture or dislocation. It is so well known, that, if caution be not exercised in examinations, a possible dislocation may be overlooked, it being hastily assumed, that only a sprain exists. In aggravated cases of this description, traumatic inflammation follows, in all the soft parts overlapping the head of the humerus. The shoulder becomes fixed, swollen and painful. At the tip of the acromion, the firm attachment of the deep fascia, securely holds the skin in close contact with the bone, but, beyond this point, as this becomes more loosely applied over the deltoid, cellular inflammation produces so much swelling, as to obscure or obliterate many well-recognized anatomical landmarks. Under these circumstances, without a test examination, a conclusion may be hastily made, that a complete luxation or a fracture exists. Many of these shoulder injuries of this class, may pursue a very tedious course, when the contusive force has been so great, as to lacerate muscular tissue, and induce consecutive myotrophic changes, atrophy, contraction or adhesions between the overlying and intervening fasciæ and muscle sheaths; a low grade of bursitis synovitis, with or without effusion, arthritis or peri-arthritis. The tendency of those parts, after trauma to pathological changes, is greatly accentuated by various constitutional conditions and hygienic surroundings. With those of a syphilitic taint, a tubercular diathesis, or a tendency to rheumatism, a severe wrench of the shoulder, may give rise to such organic changes, as require a long time in recovering

from, if not lead to a permanent impairment, in the strength or function of the articulation.

In those of a nemotic habit, with hysterical tendencies, in the female sex, psychical impressions profoundly influence the course of cure, in the traumatic artherosis. In malarious districts paludal influence should not be overlooked, as a complicating factor, as local repair is quite impossible, while this lethal element operates in the system.

DISLOCATIONS.

Treves claims, that in cases of full dislodgment, or dislocation, the capsule is always torn, the head of the humerus passing out through it, producing the so-called "button-hole" rupture. No opportunity has yet permitted me to verify this, on the subject. In only one case of humero-scapula dislocation, coming under my care, did death soon follow injury. In this, the young man had simultaneously suffered an extensive rent in the liver, followed by mortal internal hemorrhage. But, in spite of appeal to the coroner and relatives, an autopsy was denied.

The tension of the muscles with atmospheric pressure, so firmly retains the humeral head in position, that it is probable it is only when these are off guard, and the parts are relaxed, luxation is possible. My own impression is, that in the greater number, the capsule is not torn but stretched, while in aggravated cases, not only the synovial investment is lacerated in its long axis, but even torn through, or disconnected, with its attachment around the epiphyseal line or anatomical neck. It is highly probable, too, that the insertion of the scapular muscles may give, or the long head of the biceps be torn off, from its root, in the fibro-cartilaginous margin of the glenoid cavity. Therefore, generally speaking, it may be stated, that in one variety, by far the most common in young, growing subjects, the head of the bone leaves its socket, through relaxation or extreme tension, on the capsule and muscles. In this type, reduction is usually simple, and restoration of function, prompt and complete.

In the second, the extent of disorganization has been considerable. Not only has there been extensive rupture of the capsular ligament, tendon and muscle, but the whole nerve structure of the joint has sustained violent shock. This class is often unsatisfactory to treat, and may force the attending surgeon into a defensive litigation. Conditions resulting from the innate character of the primary lesion, may be charged against him, on the score of incompetence or neglect. Relocation or reduction in this class, may be attended with great difficulties, and while attempting it, further damage may be inflicted on contiguous structures, as great or greater, than those borne by the primary trauma. And, what is equally unfortunate, in quite a few, the tendency of the head of the bone, to fall out of the glenoid cavity, after reduction, is very great; not, for a few days only, but sometimes this predisposition to relapse, may remain for weeks. When, however, this does not occur, yet such pathologic changes may occur, as tend to diminish shoulder power, or reduce power of action.

Dislocations at the acromio-clavicular joint, at the movable part of the shoulder, though not so common as those just considered, are nevertheless more common than is generally supposed. This joint, lying immediately under the integument, when the head of the clavicle is dislodged, it can be generally easily detected on inspection; or, by manipulation. But, if this lesion is simple of recognition, it is not so, with treatment, for, in all cases of complete luxation, the capsule and synovial membrane are disorganized beyond repair; the coracoid and coroco acromion ligaments are sundered, and permanent reduction, with restitution of integrity, seldom occurs. It is through this joint, it will be remembered, that uniform relations are preserved, with the movement of the scapula-humeral joint, forward and backward, over the latteral arc of the thorax. And, through it, to the "leg" of the shoulder—the clavicle, transmits in a certain degree, the impact of force, from the shoulder to the sternum.

This dislocation is often overlooked. We will find, on close inspection, not a few of those "lame shoulders" following sprains, are really dislocations of this type. The arm preserves its strength, but through laxity at the joint and a swaying motion, the patient is conscious of a sense of insecurity, at this point of the shoulder.

FRACTURES OR FRACTURE-DISLOCATIONS AT THE SHOULDER JOINT.

The bones which constitute the framework of the shoulder are often fractured, after the application of direct or indirect force; more often the latter. Sometimes dislocation is

present, as, a complication. As to the frequency of clavicular or humeral fractures, they rank a good third; those of the lower extremity being most common, the arm and forearm second. The outer third of the clavicle, the neck of the scapula, the acromian and coracoid apophyses and humeral epiphysis are all essential, parts of the mechanism of the shoulder. They are all highly vascular, and with exception of the humeral head, are so bound down by ligaments or muscles, that movement or separation of their fractured surfaces is slight, in most cases; hence, the degree of tangible deformity accompanying them, is trifling. A fracture through the scapular neck, or an epiphyseal separation in the youth, almost invariably provokes a high degree of inflammation, with a free sanguinous extravasate. In the process, from a local pseudarthritis, inflammation is quickly propagated into neighboring parts, inducing general muscular spasm, cessation of function and great tumefaction. In fractures, through the anatomical neck, or separation of the epiphyseal-isthmus, distension of the capsule, from synovial inflammation, with extensive swelling over the free end of the distal fragments, may render its detection a matter of great difficulty. Through this pathological change, it is often not an easy task, not only to determine, whether a fracture is present, but whether or not the lesion may not be a dislocation. And in a fracture dislocation, it is obvious that the difficulty is greater yet.

When in the presence of such a case, there are many doubtful features. The tissues perchance, bruised, lacerated and extensively disorganized, the questions arise; is it compatible with the best interests of a patient suffering pain, if not bordering on shock, is it good surgery at this juncture, to force our patient immediately after injury, to submit to fresh violence, in an endeavor to make a definite diagnosis? Or, is it not better to wait, until the vital powers have revived, till muscular spasm has passed away and inflammation has subsided?

My own opinion, founded on the treatment of many thousand fractures, incline me most positively to the latter.

In this class of shoulder injuries, the way that the examination of them should be made, with the greatest ease and certainty, is with the patient resting on his back, the head and shoulders somewhat raised, the entire muscular system relaxed.

Having in due time, recognized the true character of a fracture, over the shoulder girdle, our attention is next directed to treatment. Bearing in mind, the nearness of this region, to the center of circulation, its high vascularity, the nondisplacement of exceptional marked displacement of the fragments, or visible deformity, is at once apparent, that the underlying principle of therapy must be simple, unrestrained rest in bed, without the application, or adjustment of any description of orthopædic apparatus. As compared with a comfortable bed, in this class of injuries, the most perfectly constructed splint or brace sinks into insignificance.

Two cases of very serious shoulder injury, with other complications, which came under my care within the past two years, illustrated this. In one, a woman had fallen through a fire escape, a distance of thirty feet, to the ground, her right shoulder and side, first striking over the broad rail-plate of a fence, before she struck the flagged yard, six feet lower down.

She was seen by me, within an hour after the injury, at which time she was in great shock. On examination, it was found, that she had fracture of the convexity of the shafts of the third, fourth, fifth and sixth ribs, and of the acromial end of the clavicle. There had been a large hemorrhage into the pleural cavity. Exhaustion by loss of blood, and great distress in respiration, were very marked. She was simply bolstered up in bed, no description of dressing applied. Her recovery was remarkably rapid, and never before, have I witnessed such rapid and perfect union, of the costal braces and the clavicle.

A little more than a year ago, a man came under my care, with fracture of the surgical neck of the humerus; and one through the middle third of the clavicle, with upward dislocation of its sternal end, besides fracture of the third, fourth and fifth ribs. He had been injured, by a collision on the street, in which he was crushed, between a loaded brewer's wagon and a pillar of the elevated railroad structure.

Shock was so great and respiration so em-

barrassed, that beyond semiflexing the arm on the thorax, and supporting the shoulder and head with pillows, nothing was done. In this case, as in the preceding, it was surprising how rapidly and regularly, ossification of the fragments advanced, the only drawback being, the difficulty of retaining the sternal end of the clavicle in place.

FRACTURE—DISLOCATION.

Fracture and dislocation at the shoulder, as a coincident lesion, are very rare. When the arthritic structures, permit the heads of the bone to leave their socket, the continuity of the shaft is spared, as a general rule; though cases do, at rare intervals, occur at the humero-scapular junction, in which, simultaneously, or successively, the head of the humerus is driven from its socket, and the shaft fractured external to the capsule. This unfortunate complication, often results, from fruitless or unsuccessful efforts at reduction, of dislocation.

TRAUMATIC BURSITIS.

Between the broad, flat surfaces of the tendons and muscular structures, which act on the humerus, in situations exposed to great lesion and pressure, are lodged several pockets, composed of fibrous envelopes, and lined by flat endothelia. Their number varies, although as a rule, from seven to eight are quite constant, at the shoulder. Their outline is somewhat flat and oblong, and they are capable of great expansion.

The largest is the subdeltoid, extending under the coraco-acromial vault, and outward, under the deltoid muscle. When this undergoes sudden distention from inflammation after injury, it may advance forward under the muscle, producing an apparent flattening above, very much like, a sub-glenoid dislocation of the humerus. This distention of the pouch has not been inaptly described, by Morel Lavellée, as a "traumatic hydrocele of the subcutaneous cellular tissues." (Follin, Pathologie-Exterm. p. 756, vol. 7.) Trenillon and Boisompiere (Arch de Med., 1877), have also described a most distressing affection, following shoulder injury, in the broad sub-scapular bursa, which sometimes extends far down, between the muscle and the costal walls. It produces a fullness forward, into the axillary space, which imparts, on motion of the shoulder, a crackling sensation to the finger. In the minor varieties of the sub-acute type, bursitis induces severe neuralgic pains, which extend with greatest severity, over the muscular expansion of the particular muscle, or group of muscles involved. Protracted bursitis always induces marked muscular wasting. According to Malgaigne, forcible rupture of a bursa, is one of the most prolific sources of peri-arthritis. (Magaigne—Path. Des. Artic., Vol. II, p. 312.) Bearing in mind, the anatomical situation of these hygromatous enlargements, often their relations to the joints, and the tendency of an inflamed bursal envelope, to provoke an exudate into the adjacent muscle or tendon sheaths, thereby inducing a rigid adhesion, it is easy to understand, how joint action may be distrained, or a pseudo-anchylosis induced.

A bursitis, in a healthy individual, of itself, is of little consequence, as it tends to early spontaneous resolution; its effects, however, are baneful about fleshy joints, like the shoulders and hip, chiefly because, of the adhesions which they may give rise to; and which, if not early liberated, may lead to organic changes, wasting or contraction of the muscles, with ultimate impairment of joint action; something not altogether unlike the multiple tendo-vaginitis, quite frequently seen after violent sprains of the wrist or ankle.

CASES ILLUSTRATING VARIOUS PHASES OF SHOULDER INJURY.

One year ago, I was able to publish four cases of acromio-clavicular dislocation (International Medical Magazine, May, 1896). They constituted an interesting group, for various reasons. I had seen them all within six months. Two had been overlooked. All were produced by direct force. None of them could be retained after reduction, and in all, fair, practical results have followed. Dr. J. O'Connor lately reports a case of this description, which he treated by operation. He exposed the dislocated end of the clavicle, and cut away half an inch, then gouged an opening in the upper surface of the acromion, and forced the nude end of the clavicle into it. Union, he tells us, was complete, but he lost sight of the patient, a sailor, after thirty days, and hence cannot say, how permanent the results have been. (New York Medical Journal, April 25, 1896. Report of case of displacement Backward of Scapula From the Clavicle.)

Although no untoward results appear to have followed this operation, there is nothing to warrant, the repetition of such a procedure.

A pseudo-arthritis at this joint, is much preferable to no joint, or an anchylosis. A condensation of the plastic element, around the end of the displaced bone, provides ample fibrous material, to hold the articular end in place, and allow, at the same time, an ample degree of motion In all severe shoulder injuries, a most thorough examination should be made, for this description of luxation. It is much more difficult, to detect there, a humero-scapula dislocation; besides, it is seldom looked for.

Complete displacement of the humeral head is not difficult, as a rule, for an experienced surgeon to detect, when it occurs in an adult. But, several cases have come under my care, which experienced practitioners were unable to decide on.

Their reduction is generally easy, by most any method. Kocher's method is the most scientific and simple, in some types. But a tremendous leverage may be employed by it, and there is great danger, of fracturing the shaft of the humerus, if the head be at all locked. In stubborn cases, it may be well to comfortably support the shoulder, and allow the patient a few hours' rest. Then, if moderate manipulation will not succeed, a considerable degree of properly directed force must be employed. Pulmonary anæsthetics have never, seemed of any value in my hands, as an aid in effecting reduction, at the shoulder.

When more force is employed, than a patient can endure, there is danger of damage to the nerves or vessels. Quite a few cases have come under my notice in which manipulation was futile, but, after a few hours' rest of the bruised and lacerated muscles, reduction was easily effected. The axilla had been violently crushed, under the heel, and the unfortunate patient dragged about, in vain, repeated efforts at reduction. Arthrotomy for irreducible humerus, I have never performed, nor, have I ever seen an arm that survived it, any better, from a functional standpoint, if as good, as those which were left unreduced.

The surgeon is scarcely warranted in expecting much from this operation, if he is justified in performing it at all, unless, for the relief of pain, when probably the resection of the head of the humerus, will promise better results. It will certainly entail much less mutilation.

The clavicle is as much an integral part of the shoulder, as a rib is of the thorax. When fractures of this bone go badly, the shoulder suffers somewhat in mobility and strength. They are generally easily detected, where they are anterior, to the insertion of the deltoid; but posterior to this point, as there is little or no displacement, their presence may be overlooked without a searching examination, in the recumbent posture. This attitude retaxes the thoracic and cervical muscles, pushes the shoulder forward, and removes all strain, on the sectional end. More than once I have been enabled to detect fractures, of the acromial end, impossible of discovery, in the standing or sitting attitude. Many of this type of clavicular fractures, are undoubtedly overlooked, as are the acromio-clavicular luxation above; fortunately, with no serious disadvantage to the patient. Its importance of recognition, only becomes manifest, in medico-legal cases. Complete clavicular fracture occurs most commonly, at the junction of the two curves of the shaft. It is usually attended, with overriding of the fragments, which in a limited degree so unites, as to leave a noticeable deformity. No description of apparatus, will entirely obviate the tendency of the shoulder, to advance inward, when the patient occupies, an erect attitude of the body. Hyperostosis provides, for the defective strength in the limb, resulting from this malposition, and, fairly, full functional strength in the shoulder is restored, after osseous consolidation.

One instance has come under my notice, after clavicular fracture, followed by so much displacement downward, of the proximal fragment, and excess of callus, that the brachial plexus was so compressed against the first rib, as to produce complete, remote paralysis of the upper extremity. The patient was a powerfully built coal heaver, who was injured while intoxicated. The morning following the injury, he tore off all the dressing, and returned to work. In spite of this, the fracture united with marked overriding of the fragments, and a massive callus.

Six weeks after injury, he came under my care, when the clavicle was again re-fractured, the excess of ossific material was hewn away,

and the fragments were brought into position. No wiring was employed, but he was confined to bed, in the dorsal decubitus. Union of the integument and bone were prompt, without any shortening. The palsy promptly disappeared, after pressure was removed. Rare fractures of the scapula, as these of the coracoid and acromion processes, the neck of the scapula, the spine or the omoplate, are chiefly of interest, from the side of diagnosis. It sometimes requires skill and experience, to detect them. No special apparatus is required for their treatment. Rest in bed, muscular relaxation, topical applications with time, in nearly all, accomplish all the necessary therapeutic ends.

Fractures in the humeral shaft, through the surgical neck, are not common. But few of them, have come under my own notice. They generally result from direct violence, and may be productive, of troublesome shoulder or arm complications, because, at the time of fracture, the circumflex or musculo-spiral nerves, which lie in close contact with the bone, may be lacerated, or torn in two, by the sharp fragments, and besides, owing to the difficulty in permanent co-operation, hyperostosis, in callus formation may gather in these nerve trunks, or unduly compress them.

In all severe fractures, consecutive inflammation is propagated to the nearest arthritic structures, with a consequent limited anchylosis or muscular atrophy, in all the neighboring muscle groups.

INFLUENCE OF PRE-EXISTING INJURIES OF ORGANS, OR CONSTITUTIONAL DISTURBANCES ON SHOULDER TRAUMATISMS.

This subject has already been touched on, but its importance justifies a repetition, inasmuch as, it points to the necessity of sometimes addressing remedies, to the general system simultaneously with local treatment. Rheumatism, of all constitutional maladies, aggravates joint injuries. This points to the necessity, of instituting an inquiry into our patient's former health, and his general condition, at time of injury. At the time of writing a man is under my care, for treatment of a spinal traumatism. He undoubtedly had a hemorrhage into the medullary substance of the cord, with resulting syringomyelia, for along with most pronounced muscular atrophy, he has pronounced arthritic changes, in the articulations of the upper limbs. Although muscular power has partly returned, both shoulder joints permit of only limited motion.

YOU HAVE SYMPTOMS OF IMMORTALITY, OR A STORY OF AN EGOMANIAC.

By W. B. O.

Dr. Galen Puchu came from a family of doctors; his own father was a doctor, as was Galen's grandfather, besides Galen's mother was the daughter of a prominent doctor of a neighboring state. He was an only child in this family of Puchu's; born in the oldest town, not only in Southeast Missouri, but Missouri itself. Galen's earliest thoughts were connected with medicine; his growth was by the aid and through the judicious administration of preventive medicine, for from his very youthful days, he had been almost a daily partaken of assafœtida and a strong decoction of chincona bark. The philosophy of giving these two medicines as explained by Galen's father was as follows:

"From previous experience I found that the administration of assafœtida upon going to bed, relieved nerve tension and kept many people in these malarial regions from having malarial troubles, besides a strong decoction of cinchona bark, given every day, was an excellent tonic and prevented, not only malarial troubles, but other troubles as well."

According to this theory, Galen then took his assafœtida at night in order to keep off the chills, and the bark decoction he took three times a day to make him strong and prevent other sickness. When Galen was old enough his father utilized him to pound and powder divers roots and herbs and help him compound various medicines, which thus enabled his father to make them economically. Hence, as Galen grew up he was as familiar with mortar, pestle, graduates and pill tiles, as he was with his bread and butter. He knew the appearance of roots, gums and herbs without number, and could call their true and efficient dose with as perfect a memory as could a physician or an apothecary. He began the study of medicine long before he did that of geography, and he learned most of his

geography by reading the habitat, the action, and the doses of the drugs in the United States Dispensatory in which was detailed from what country came this or that drug; hence, he knew of Arabia, China, India, Japan, the countries of South America, etc. He knew the apothecary's table of weights and measures before he knew his multiplication table.

Gradually Galen grew up to manhood. He was chiefly remarkable at school for always having well-learned lessons; he never cared for recreation or play. He seemed to hold all the sports of youth as being utterly useless. He was also noted for the additional fact that he would only talk about sickness and drugs; nothing else seemed to have any interest for him. Galen had no associates among his schoolmates, never sought for the society of girls, and his fellow-students never met him, except at school; all of his time was seemingly spent at his father's surgery. When he arrived at the age of twenty-one he was sent to a medical college at St. Louis, and he would proudly state, that "I want you to understand, sir, that I went to the old St. Louis Medical College." After two years' attendance at this school he graduated, along with others, not only with words of commendation, but with a certain degree of distinction. Upon the day of his graduation he had been presented by his father with an undoubted black silk stove-pipe hat, of which he seemed to be almost as proud as he was of his degree of Doctor of Medicine. When he came back to his home, after graduation, he was more medicated than ever. He became so thoroughly impregnated with medicine that his conversation literally reeked with it. To him everything had symptoms, diagnosis and prognosis. He used techincal terms to express his wants, aims and hopes. Watson, Wilson, Draper, Fownes and other authorities were constantly in his mouth. He had a diagnosis for every thought, a prognosis for every sentiment, and a remedy for every condition. At this period of his life, he was twenty-three years of age, slim, and about six feet, two inches tall, with an oblong, not unshapely head. His forehead, while receding, still was of a massive, yet agreeable mold; his brow looked as though he was phrenologically a master of form, number, memory and location. His ears were somewhat large and pointed at the helix or upper rim, and seemed as though they were pasted close to the side of his head. His nose was of the Roman type, presenting a strong and unflexed disposition. It was the nose of either talent or mania. His eyes were small, deep and sunken, but brilliantly black, intense and penetrating. These eyes never had a mild look, they seemed either to not look at all, or else they were unduly and forcibly penetrating. His cheek bones were high and prominent, and he had a rather firm looking combative lower jaw; a medium sized, rather agreeable looking, yet sad mouth. His father, when commenting upon Galen to Professor L., had said: "Yes, he is morally very good, good enough for anybody, and seemingly smart enough for all practical purposes, but he has never been either a man or a boy; as a boy he seemed not to possess any of the characteristics of a boy, as he never played, but always stayed in and studied; as a man he has given evidence of almost childish characteristics. His likes and dislikes are entirely different from those of the average human being. He is cranky in sentiment, iconoclastic in thought, and a monomaniac in his study. He never was wrong in his life, he is always right, and apparently never thinks of anything but himself, unless reminded; then he is all right, but you have to remind him every moment of the day. He plainly does not lack brain and conversationally always indicates his knowledge of medicine. He will make one of the mose brilliant suggestions, almost astounding in its character, regarding medicine, to be shortly afterward followed by the most purile and nonsensical assertion competent to be uttered by a thinking mind. If you notice," he would say: "Galen's face and head are a little one-sided, that is, right-sided; this was caused by the great trouble which we had when we brought him into this world with instruments."

If Lombroso had examined Galen, he doubtless would have said, that this one-sided condition of Galen's head was plainly and undoubtedly the asymmetry of degeneration. Galen always went clean-shaven, his clothes were invariably dark in color and well kept. From the day of his graduation he never failed, when an opportunity offered, to wear his black stove-pipe hat. The general shape of this much appreciated hat very

strangely corresponded in outline to a well-made mortar minus the pestle. Galen's lower limbs were shapely, but his arms were unusually long, and attached to the same were a pair of good-sized hands, and at times he would say: "My three first fingers seem to be about the same size and length, and I believe that I made them so by employing them as pill rollers in my earlier days." He wore a large, rolled down Byron shirt collar, neatly cravatted. He would say: "I admire them; they are thoroughly neat and old Professor P. wore them, and he was the most distinguished looking man I ever saw." Galen's hair was rather long, black and glistening. At times it looked unkempt, yet upon closer investigation it never looked neglected nor disorderly. He was rarely, if ever, seen upon the street, or anywhere else, without his saddle bags, and always carried them between the thumb and first two fingers of either hand, exactly as a fashionable lady carries her reticule, and, as he explained it," always on a level with the heart." His voice was sonorous, deep, pleasant and always very deliberately toned. He walked with a preoccupied air and rarely, if ever, saw anything either very near or very far off, and, according to his father, was at such times either thinking about himself or about medicine. "They are the only two things which he does think about," he would say.

Galen's estimate of his own importance was overpowering. His sheer intensity in this direction controlled many persons with whom he came in contact. He was a natural hypnotist in consequence of his inherent and perfectly natural intensity. If he had been constituted for evil, with this power at command, he would have been a very dangerous man. Galen's every action, according to his own interpretation, was of vital significance to our great and living world; hence, his own profession was the only absolute profession of importance and grandeur followed by man. Galen would say that "humanity was only made to take medicine, and that no man became truly important until he had become duly and properly sick." Mrs. Puchu, his mother, had said wonderingly, to one of her neighbors, that, with all her knowledge of Galen, she candidly believed, she in reality knew little about him. She was almost sure that Galen could not tell the difference in taste between quinine and sugar, as she had never heard him express disgust at one nor his pleasure in the taste of the other; that she was almost sure, from a previous experience, that he could not tell the difference between the odor of the most fragrant rose and that disgusting odor which came from a "jimpson weed." As for Galen's taste for music, he never had been responsive, and she was morally certain that if life depended upon it, Galen could not tell "'Home, Sweet Home" from "The Arkansas Traveler."

In relation to his college career Galen was certainly very egotistical. The "I" was continuously and exaltedly predominant. "Well, sir," he would say, "when I attended college I came very near leading that entire class; there was not a student who could touch me; old Professor L. said once that I was certainly the most thoroughly medicated medical student that he had ever seen; that even my name, which he wrongfully pronounced Puke-u, put him in mind of emesis, and I rather guessed it did, as I made them all somewhat nauseated at the amount of my knowledge. I was profoundly well up in all the branches of medicine. Professor H. said openly before the class, that I was the best floater who floated in the ætherial atmosphere of physiology; the best wanderer that wandered amidst the labyrinthian course of anatomy; the best wader who waded into the sea of theory and practice; the best plodder who plodded over the formulated crucible of chemistry; the best therapeutist and medicator in materia medica and therapeutics, and the best cutter who wielded the scapel of surgery. In a quiz I was never downed; they might laugh, I was always right; professor, students and all were eternally wrong. You see, my name being Galen Puchu, it gradually came to be spelled by my fellow students Gallon Puku. They thought it very laughable, but I could never see anything to laugh about. When Professor H. remarked, in the presence of others, 'that all nature had eternally and forever made me a regular allopath, that I could not possibly be a homeopath, for even my name indicated the fullest of doses, and that it meant a gallon of emetics,' the professor and all laughed, but still I was absolutely proud of being a regular and an undoubted absolute quantity and not an infinitesimality."

A fellow student, when talking concerning the peculiarities of his classmates said: "Of all of the peculiar ones who attended college when I did, Galen Puchu certainly was the most peculiar; he was an oddity and a paradoxical oddity, a quaint, solemn, yet pleasant freak; he was of tall, spare figure, a strangely solemn, pale face, yet withal, dignified, his bearing being eccentric yet manly. He seemed to be musing most of the time, but at times an ideal listener during lecture hours. As K. said, 'he is the muse of musers from dreamland.' Introspection seemed pre-eminently to command him; he was as introspective as a frightened turtle is in its tightly closed shell. Many a time he seemed to me as silent and preoccupied as a dead man. His seriousness verged upon the sublime, and on certain occasions he was the source of much that was intensely ludicrous and amusing. While he often made others laugh, I never saw him laugh. He had a phenomenal memory for medicine, particularly for medical technicalities; he was a veritable mnemonical maniac, and was frequently less logical than a hysterical woman. He apparently never read anything but medicine and appeared to be absolutely ignorant about the current news of the day. His thoughts, reading and work were only medicine. I do not believe that he either knew or cared who was the governor of the state or who was president of the United States. He seemed to evince no interest in wine, woman or song; never thought of the drama, would not go to church, nor cared for art or politics. He was the most competent man I ever saw to paralyze either a joke or a joker. It is related that a would-be smart, but impertinent joker, said to him one day, 'Say, Galen, did you ever hear about that man who lived out in Utah and who had no teeth, but could still beat the bass drum as well as any man living?' Galen very seriously and unsmiling said, 'No, I never heard of him, but so long as he does not beat the bass drum with his teeth or his ears I cannot see anything very remarkable in the way in which he beats the bass drum.' This somewhat stunned and irritated the joker and he said, 'I don't believe that you could understand one of Abe Lincoln's jokes.' 'Abe Lincoln,' said Galen, 'I never heard of the gentleman, what medical college does he attend?' 'Why, hang it, man,' said our joker, 'do you know who Adam and Eve were?' 'No,' said Galen, 'these people are all strangers to me, but you seem to have an extended acquaintance.' Upon another occasion, said a fellow student to Galen: 'When can donkey be spelt with one letter?' 'Never,' came the response, 'absolutely never, that is an utter impossibility, as the word contains six letters.' 'Well then, Galen, in order to show you how it is done, I'll write it down; now you see, when it is U.' But Galen failed to see either the wit or application and very gravely said: 'My friend, you are certainly wandering and mentally off, I cannot possibly see how that single letter can mean anything but U.' Yet, with all the diffidence generally shown by Galen, he now and then would talk and no braggart ever boasted more than he. I called him an egotist, but Professor B. said that this man was an ego-maniac; the world only lives through and by his permission, but I admit that at present he is a mild and retiring one. Galen, at times apparently imagined things, and told me of occurrences which he had made up bodily by and through his own imagination. He was generally truthful, only now and then liefully imaginative; even when he told an imaginary story he never harmed anyone but himself. While all of the class made fun of him, which he invariably mistook for praise, no one dared to insult him, as one intense blaze of his keen black eyes left no doubt of the danger of his disposition. He had one particular aversion among the students, and that was a red-haired and actively assertive man called P-e. This man appeared to be forever getting in Galen's way. He did this one day at a clinic, when Galen said: 'P-e you are a consummate ass; you think that you could palpate upon the ridge of a shingle roof on a three-story house and find water in the cellar, but if you will thump your own head you will find the cavity within filled with irritating vacuity.' 'Yes,' said Galen, after a moment of thought, 'if I had the power, I would dissolve you into proximate principles that chemistry would fail to unite. You would make better gas, yes, sulphuretted hydrogen gas than you do a man.' Indeed, this was a strange creature. I would like to know the future of Galen. If he is as preoccupied now as then I doubt whether the night bell would not have to ring in vain."

Galen's preoccupation after he had started

in the practice of medicine was attributed by many people to the fact of his studious habits, and not to any unusual mental peculiarity. His father had, however, said to an intimate friend, after discussing Galen's characteristics, that he expected, at some time or other, Galen would be brought home dead. "Why," he remarked, "if Galen's horse did not have more sense than he and see more than he generally does, they might butt up against anything. Galen never seems to pay any attention to his surroundings, and I guess it is a good thing that he don't, for everything he sees suggests either a defect or is colored with a pathological tinge. Thus, when he sees a tree leaning to one side, this tree has either paralysis or tetanus; if leaning to the right or left side, the tree is affected with paraplegia or pleurosthotonos; a tree bent so that its branches touch the ground is suffering from opisthotonos. Here he sees a hog with kyphosis, there is another with scoliosis; here is a chicken with progressive anæmia, and there is a virtiginous, plethoric turkey gobbler, which, he says, would have been phlebotimized twenty-five years ago. Here is an hysterical guinea hen and there a talipetic duck. He will not use my old horse, because he honestly avers that this horse is fast going into a paralytic dementia; as he has an exalted memory; yes, 'too exalted,' he says, and all this is owing to the fact that the old horse, in consequence of a previous experience with Galen, will not go again over a ford where they were both nearly drowned. Old Dandy, the dog, according to Galen, has delusional insanity because he has been able to read Galen better than Galen can read him, for he knows by past experience that Galen has no compunction in treading and walking over him, hence he very sensibly and self-protectively growls when Galen approaches too near. One of our cows, according to Galen, has gastric dilatation and prolapsus, and the other cow, he is absolutely and morally convinced, because he has auscultated this cow, has a valvular lesion of the heart and is fast coming to an ascitic condition. He avers that his own horse has given every evidence, when attached to the buggy, of being afflicted with tabes dorsalis, for at times he seems to evince no evidences of motion or sensation in the posterior half of his body, simply for the reason that he stops when he wants to, having cutely found out that his master, in his preoccupation, will permit him, and likewise that his master may apply the whip once and then forget to apply it again. He has solemnly asserted to his mother that cats are dangerous to have about, as they are hystero-epileptics and not infrequently produce hydrophobia by their bites. I candidly believe that if I did not watch him too closely that he would certainly take each and every one of these animals under charge and put them on a full course of medical treatment. He never seems to forget a technical term and has an inordinate love for applying these terms to any and all things. He does not seem to understand a joke, but assumes everything as being in earnest and complimentary to himself."

With his attention to business and his father's influence Galen soon became deeply and rapidly engrossed in practice. If walking upon the street, he met a person with either a deformity or an unusual growth, or a bandage applied, that person was halted and inquiry started at once. If the person was affected with a felon or an abscess of any kind he had to be very wary or Galen would have his knife in it before he was aware. He had absolutely no dread in assaying any kind of an operation, and if failure came, nature always had to bear the brunt of the failure, for he, individually, was always correct in diagnosis and perfect in technique as well. In talking to the relatives of the deceased person upon whom he had operated, he would say: "My friends, everything was used which could have been, but nature was incompetent to her task in this instance. I cannot carry nature, when she thus inordinately fails, but if nature had done as well as I did, the result would have been all that could have been desired."

As business increased Galen's preoccupation and vagaries seemed to increase also. Said his friend W., who is engaged in the law: "Galen is certainly becoming erratic, and my conversations with him are more than interesting, they are absolutely instructive to me in a line in which I have never thought before. He is eccentric, bewilderingly so. Thus, for instance, he said some time ago, as near as I can recollect, something to this effect: 'W., I have found out that I possess unusually penetrating eyes, and that they are as powerful as the microscope. I am enabled to discern

flaws upon the smoothest surfaces, and I can see through the bright hues of health the dark and changeful flaws of disease.' The gentler processes of his sovereign art, now seem to be held in abeyance by his vagaries. He has detailed to me his dreams of operative impossibilities, even averring his capacity to correct a palpitating heart, normalize the cell action of the brain, and with his knife change this or that cell, or series of cells, molding the entire mental capacity of man. 'Why,' he said to me recently, 'I dreamt that the whole human race had but one body, and that this body was made for me to operate upon supremely and alone. Yes, I have dreamt of the decay of nations and how easily I could correct it. I have pictured continents in pathological states, and the wonders of my cures for these conditions. Yea, I believe I could throw worlds in agony and relieve them by my be-all and end-all power; thus become the one, the only universal healer.' He would say: 'Theory upon theory has vibrated through my mind, yet none is acceptable. What the ancients did is antiquated and valueless, what the moderns are doing is verging in the line of fatuities. Yea, I have created my world, it is the all-sufficient world in being and disease. I am the master and the maker of a new and regenerated medical universe.'"

Thus it will be seen that Galen was an egomaniac verging upon megalomania, yet he had no delusions of persecution, but was only engrossed with his "I," or ego, and his calling.

He was utterly unfit for company, particularly female company, as he continuously studied for defects and was absolutely unhappy unless he found them. This man might have fallen in love with a skeleton, or a perfect patholigical specimen, but he certainly could have never fallen in love with a normal human being. He would very gravely say to a young lady who was getting well of a stye upon her eye-lid: "Miss, you have a tendency toward occlusion of your lachrymal duct, and if it is not dilated soon you will certainly have a genuine case of dacryocystitis phlegmosa." To another, who happened to coquettishly turn or roll her eyes with a desire to infatuate him, he would immediately say: "Miss, you are inclined to me neurotic, you had better watch yourself, or else you will be compelled to have an operation performed on you for strabismus." When in company with young ladies he generally proceeded with a regular examination, as had been previously indicated to him by his professor of clinical medicine. First, he would note the color of hair, eyes, complexion; next the height, weight and temperament, and then he would very gravely ask the age, place of residence and occupation; whether father, mother, grandfather and grandmother were living, and, in fact, if she knew of any of her relatives who had been subject to insanity, cancer, consumption or intemperance. He soon found that he was rarely, if ever, invited into society, and was completely tabooed from association with hearty, normal and sensible women. He would aver in the most serious manner to his mother, that all women were cranks and utterly senseless creatures; that he found greater manifestation of intelligence among dogs and other dumb animals. When in the company of men, while others were talking of politics and pleasant social events and of living issues, he seemed to be absolutely dumb to either words or suggestion on these subjects, but he would now and then suddenly blurt out: "John T., I have just noticed you, your face is thoroughly red, your breathing is twenty-five or thirty per minute; you had better take care of yourself or you will drop dead of apoplexy, and you had better have your heart and lungs examined." He did not seem to appreciate the fact that John was pleasantly and jovially stimulated, and soon found himself ignored even by his fellowmen in a social capacity. Upon one occasion he met a drunken man upon the street whom he knew well, and said: "My friend Peter, I have now watched you for four blocks. You are in a dangerous condition. Your walk is ataxic, you do not seem to have co-ordination of motion, and I candidly believe that you may either suddenly become paralyzed or drop dead at any moment." The drunken man straightened up and said: "Doctor Galen, you are an infernal crank, and you have killed more men in your mind's eye than a graveyard holds. There is no danger of my being paralyzed at present, nor of my dying. I'm a little drunk, but I've got more sense than you have at this moment and feel a blame sight better than you do, and that's what's the matter."

Dr. Galen, on being called to see Mrs. K.,

who was sick, was met at the door by her daughter, and he proceeded at once to make an examination of the young lady, prior to seeing her mother, and he very seriously and gravely announced to her that she was a chlorotic, and that this condition of chlorosis might be owing to habitual constipation, or possibly leucorrhœa, but the young lady rapidly prevented a further elucidation of the diagnosis by disappearing from the scene. Now, Galen's lack of appreciation of the normal taste of things made him at times appear in the role of a prevaricator, or else a wilful and unwilling deceiver. "Why," said Mrs. F., "I do not doubt but what he is an excellent Doctor, but he is certainly the most intense person and the strangest mixture of a man that I have ever seen. He looks as grave as a churchyard, and is always as solemn as a preacher. I don't believe that he would lie wilfully, for I never heard that he did, but when I was sick the last time he very gravely and earnestly told me that the powder which he was then giving me had no taste, and he tasted it, before my eyes, with every appearance of genuine relish, and by his fixed stare absolutely compelled me to take it, because I simply felt that I could not possibly resist him. Heavens! When I took it, gall was feebly bitter in comparison to it, and what do you think? He looked utterly surprised and seemed to wonder that I should complain, and more remarkable still, when I called for some sugar to take away the horrible taste of the medicine, he tasted the sugar and said, right in my presence, without smile or movement of the countenance, that it did not taste any better than the powder he gave me. He may not lie wilfully, but he did then, and I certainly would prefer to have someone treat me who is more sympathetic and who will not, with a calm and unruffled face, willfully deceive me."

Dr. Galen said to his father: "Well, I saw Mrs. F. yesterday and she was threatened with an intermittent fever, which I thought might be tending toward a continued type. I gave her a bountiful dose of quinine. I guess she is a good woman, but I do candidly believe, between you and I, that she is troubled with some hereditary mental trouble, and I can almost absolutely and safely predict that a lunatic asylum will be her final abode. She acted strangely and as much as called me a liar; this, to my mind, is one of the evidences of her coming insanity." When Mrs. F. had detailed to Mrs. B. her experience with Dr. Galen, Mrs. B. said: "That is a good deal like my experience with Dr. Galen. I was very nervous and the doctor said, with the most serious and solemn aspect of countenance, that I was hysterical, which I knew was not so, for I was real sick, and he brought me around a bottle of medicine which had the most awful, horrid smell that I have ever experienced, and when I expressed my extreme disgust, he said, with an utterly benign and unflinching face, that the medicine he was giving me had absolutely no odor at all, and he smelt it time and time again and kept on averring it, and by his intense look made me think that I might be mistaken, but still I could smell it, and when I took it to the druggist he told me what it was and said that its odor was sufficient, if I put it in the back yard, to attract every cat within twelve miles. Now, he certainly lied to me, yet a more persistent and innocent looking liar I never saw." Doctor Galen, again to his father: "Mrs. B. had hysterics last night and she, like all hysterical women, imagines everything without there being any real element of truth in it, but I do candidly believe that it would take but little to convince that woman that I lied to her about the valerianate of ammonia not smelling."

Dr. Galen's diagnostic sense gradually became more and more pronounced. He could continually see defects where no one else could see them, and in his monomania not infrequently proceeded with all due solemity to diagnosticate normal human beings. Normal individuals were to him apparently few and far between, and so deeply pronounced did this monomania become that he was constantly getting himself into trouble, from his misapplied, exalted and determined diagnostic application. He would constantly and unceasingly diagnosticate disease upon those who never complained nor sought his advice. The tales of his vagaries and mischievously applied suggestions spread rapidly among the people, so that his business began to suffer seriously, and this was viewed by his father with alarm and the deepest concern. Said his father: "I do not know where this is going to end. His intensity and determination seem to be continued and serious, and I am in dread

that he will do some bodily harm to someone or that someone will be compelled to defend himself against him." "Well," said Galen to his father, "I have just come from McS.'s. I found him suffering from acute delirium, for when I arrived in the house he informed me that I was not wanted, but that you, yourself, must come at once. He positively and forcibly refused my attention, but when I saw the dangerous condition he was in I proceeded to fill my hypodermic syringe, determined to quiet him at any and all hazards by giving him an injection of atropia and morphia, but to my utter surprise, when I endeavored to give him the injection, he knocked me down and, as I was held by his two neighbors, I was forcibly told that I was crazy; then I told him that I must be permitted to modify my diagnosis; that I certainly thought that he had symptoms of immortality, that even I might be an instrument to fix it so that he would never die again, but eternally live in a world of infinity. This man is certainly delirious, hence I insist upon your going to see him, for I feel it imperative upon myself to control my anger, delirium or no delirium, for I am sad to confess to you that I have an unusually aching desire to immortalize him."

McS. to Galen's father: "Why, my dear doctor, your son is, I am sorry to say, crazy, for no sane man would have acted as he did. Why, no matter what I said, he still continued to gaze at me with the fixed gaze of a lunatic; I told him that I was not sick, but that I had sent for you to see my wife, and that I only wanted you, but he insisted, with that fixed stare, which almost influenced me that I was in a dangerous condition, and he proceeded, in spite of all of our protestations, to treat me. He filled his hypodermic syringe and, with the glare of an angered tiger, came silently and insidiously toward me. I had to act and found no other way of preventing him from injuring me than by knocking him down and calling the assistance of my two neighbors who are here to help me. It was with the utmost difficulty that we got him outside, and as he stood outside he very gravely said that I had the symptoms of immortality and must surely die, even if he had to bring eternal life to me."

Galen's father to Professor L., to whom he had written for advice: "There has been, as I can plainly see, a constant and rapid change in Galen. I have been compelled to keep him in the house and will not permit him to attend to anyone. I can see the change gradually come; he has become markedly unfeeling; he now inflicts absolute punishment and torture upon living animals. He not only treats these animals cruelly, but even seems to try to torture inanimate things. I found him out in the orchard cutting and bending down a series of small trees, so that they would bend and not stand erect, for he said that they were "rigidly and cruelly upright." Everything frets him; the movement of the leaves, the wind, the bellowing of a cow, or the neigh of a horse. He seems to be constantly fighting imaginary ills and only yesterday I saw him start up wildly, talk aloud and gesticulate toward Heaven. He is now busily engaged in trying to define various pathological conditions in insects. Again, he seems to be determinedly destructive, becoming more pessimistic than ever. Everything is coming to destruction; his always pale face seems to be more elongated and misanthrophic than ever. His fantasies and peculiarities are markedly profound. He is absolutely afraid of any pointed thing; the point of a needle seems to keep him in abeyance, but he appears to be thoroughly indifferent to the muzzle of a gun, or the mouth of a cannon. He has shown his utter indifference to danger recently on more than one occasion. He has ceased to notice his mother and apparently has become cruel and vindictive against those he should love. What on earth am I to do with him?"

Galen's father, in a letter, two days later, to Professor L.: "My son left night before last without our knowing it, but told friends that he was going to a neighboring town. He wandered upon the railway tracks and was killed by being run over. I learned, in a letter from Dr. S., surgeon of the road, that according to the engineer's report, my son was walking down the track with his back toward the engine but turned when he heard the blowing of the whistle. Before the engine struck him he never seemed to quail, but defiantly shook his fist and started for the engine as though he would demolish it. After being picked up, when cruelly crushed, his only words were, "killed, killed, my God, by corporation's juggernaut."

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RAILWAY NEUROSIS.

The Columbus Medical Journal calls attention to the following editorial paragraph which recently appeared in the European edition of the New York Herald:

In addition to the sudden stoppage of a train, causing a violent shock against the partitions of the carriage, as a cause for railway spine, recent research has unveiled the fact that long and frequent railway journeys may have the same action as railway accidents; that is to say may bring on nervous disorders very similar in character to traumatic neurosis, nervous disorders that seem worthy of being called a railway neurosis.

The article referred to further states that in one of the cases cited an engineer, forty-five years of age, whose previous health had been good, after being on the railway for four years began to complain of hallucinations, imperfect sight, vertigo, and other symptoms of railway neurosis, which continued even after giving up his occupation.

This New York Herald medical expert writes upon a subject without having previously taken the pains to understand, and we agree with Zimmermann that certain persons "with bookish knowledge are like children with edged-tools; they hurt themselves and put others in pain." This expert seems to have no room for reason; but newspapers frequently make both fools and folly their particular care. Here is an intangible, indefinite and inadequate cause assigned as being a disease-producing factor. Abnormal, erratic, nonsensical and utterly childish reasons given without an iota of truth. Surely no sensible person would for a moment believe, because an engineer upon a railway became insane, had epilepsy, or had progressive locomotar ataxia, that railway traveling caused it. We might as well say, that because a woman gives birth to a child upon a train, that travel caused the child. It is true, it might bring about labor, but previous undoubted factors were the causation; the birth upon the railway train was simply a coincidence. So with the manifestations of this form of railway neurosis supposed to be occasioned by over-traveling. Too many millions of people daily, weekly, monthly and yearly travel, not to have discovered before this a peculiar and marvelous form of neurosis. It is an assertion unsupported by facts. A species of erratic sorcery, having for its object the delusion of the unthinking; it rarely, if ever, convinces. Opinion may be the Czar in Russia, but in this country it may represent all stages of mental thought and only of necessity has force in proportion to its merit and common sense. The idea of a traveling neurosis is a product of idiocy, which does not take into consideration hereditary or acquired conditions and our multiplex surroundings.

SOME CAUSES OF A NATION'S DEPOPULATION.

The meeting in Paris last May, of the National Alliance, for increasing the French population by an equal system of taxing of families, certainly met for an unusual object. Probably never before in the world's history did so natural, and yet so remarkable, an object present itself for consideration to a thinking body of persons. At this meeting a description was given by M. Bertillon of the coming results of the progressive depopulation of France. The reasons assigned by the various speakers for the depopulation of France were more than interesting; they were profoundly instructive

in a sociological way. One speaker claimed that France was being "depopulated by egoism." Here is, indeed, a sufficient and potent cause, if extended enough; for egoism, if profoundly acting in each individual person of a nation, certainly tends in the direction of individual gratification, and hence, naturally leads to ease and comfort and never to self-denial; its domain is only selfish. Egoism is more likely to develop depravity than exalted patriotism by the referring of all claims to one's self. And this judgment of all interest upon the narrow plain of self, if preponderating in a sufficient number of individuals composing a nation, would be a cause powerful enough in itself not only to depopulate a nation, but to bring about disintegration and decay as well. There can be no denying the fact that egoism is not only an absolute blemish to character, but of education as well, and undoubted proof of an undeveloped, stunted and vitiated morality, whose every step is a complete abbrogation of a nation's prosperity, as too exalted egoism can only lead to loss of patriotism.

For, if self only is considered, it is perfectly natural to infer that the time will inevitably and surely come when the nation, as a nation, will be lost sight of and swallowed up in the all-powerful and paramount consideration of self. Still another speaker claimed that the cause of the depopulation of France resulted from over-taxation, that large families were taxted too heavily, hence the people naturally preferred small families or no children at all. Still another speaker claimed that the question was one in which personal habits cut a more potent and extended figure than laws did. Finally, one speaker claimed that women play an important role in the population question. Certainly no one can doubt that this latter proposition is forcibly and pre-eminently the fact, for women do, indeed, influence, in more ways than one, the question of population. Emerson said: "A sufficient measure of civilization is the influence of good women." And it can be as truly said that the measure holds equally good and true regarding good men. The self-abnegation and wonderous moral force of good women is an incalcuable power in the body politic, and is as irresistible in its actions and accomplishment as civilization itself, for its potent influences predominate in man's life from the cradle to the grave. Women, not mothers, are creatures of unfulfilled force and creative destiny. Mothers make men what they are and act more powerfully and continuously so in a moral direction than all the other forces combined in the education of man and the highest growth of civilization. Abbott, in his history of Napoleon, says: "'What is wanting,' said Napoleon one day to Madame Campan, 'in order that the youth of France be well educated?' 'Good mothers,' was the reply. The Emperor was most forcibly struck with this answer. 'Here,' said he, 'is a system in one word.'" Here, indeed, then, as now, is a system in one word. In order to re-populate France make more mothers. Women in health and function are the true and only source of a lasting population, and without health and function woman becomes a creature of unfulfilled creative destiny. Good women cannot belong to themselves alone, but are a nation's blessed homemakers. Childless women become forceless in the broadest purposes of creation. Childless womanhood is prophetically another name for a nation's depopulation, decay and final disintegration."

Is the Husband's Consent to an Operation Indispensable?

The St. Petersburg Med. Wochenschrift of April 4 is devoted to a discussion of the question whether a physician does right to yield to the husband's refusal to consent to an absolutely necessary operation on his wife or child. Russian physicians are collecting data of cases thus sacrificed to the general custom of deferring to the will of the man of the house, on which to found an appeal to the government for an extension of the rights and duties of the attending physician. A case has just been decided in Brussels, bearing upon this point. A couple of prominent surgeons were sued by the husband of a woman who had died after an operation, unauthorized by him, or, as he claims, by his wife. The verdict was in favor of the surgeons.—Kama Medical Journal.

Life.

Life is a waste of wearisome hours,
  Which seldom the rose of enjoyment adorns;
And the heart that is soonest awake to the flowers,
  Is always the first to be touched by the thorns.

Extracts and Abstracts.

Compound Fracture of Thyroid Cartilage.

Dr. E. L. Bell, North Woodstock, N. H., reports the following case in a recent issue of the Medical Record: Although accidents somewhat similar to the one here recorded may not be uncommon, this case seemed to me interesting, not only on account of the complicated nature of the injury, but also on account of the uninterrupted recovery under manifestly unfavorable circumstances.

J. K., aged twenty-nine years, cattleman, while loading a vessel was gored in the throat by a steer. He was brought to the Boston Emergency hospital in an ambulance.

Examination disclosed an exceedingly large, dirty, lacerated wound, extending from the median line of the neck to the edge of the sheath of the large vessels of the neck on the right side. All the larger muscles covering the larynx and trachea were reduced to pulp, with the exception of a few remaining shreds. The two alæ of the thyroid cartilage were completely separated in the middle line. The right ala had a longitudinal fracture involving two-thirds of its surface. The crico-thyroid membrane was ruptured and the cricoid cartilage was badly bruised. The trachea was opened throughout its whole extent almost down to the sternum. The thyroid body was apparently entirely destroyed.

Hemorrhage had at first been severe, but it was easily controlled by a temporary dressing. There was a large lacerated wound under the right ear, which was immediately closed with silkworm gut.

The patient was placed in the tracheotomy position. The anæsthetic used was cocaine in four per cent solution. Under strict asepsis, with the assistance of Dr. W. B. Segur, I cleansed the entire region with a weak bichloride solution, removed the loose fragments of cartilage, trimmed the edges, fitted and fixed them in place with fine sterilized silk. The different shreds of muscles were next cleaned, patched and fastened in proper places, as were also the tracheal rings. The fascia and skin were next sutured with silkworm gut and covered with simple antiseptic dressing.

Beyond passing reflex spasms of the glottis and some slight dyspnœa, the patient seemed to suffer no great inconvenience; but he was watched carefully for any signs of approaching œdema or septic pneumonia. The temperature the day after the accident was 100° F. and remained at this point or below during the man's stay in the ward. The wound was dressed on the third day. It then exuded a little dark blood on pressure. On the fifth day a slight discharge appeared which was found to come from a small sinus resulting from deep muscle-suture irritation. On the eighth day the external sutures were removed. Under daily dressings the discharge had seemed to lessen. On the twelfth day two silk muscle sutures sloughed out and were removed. On the sixteenth day the sinus was curetted under cocaine anæsthesia. The next day there was but little discharge and in a week the wound had entirely cicatrized.

Step by step, beginning the day after the injury was received, the gradual change from almost complete aphonia to approximately perfect vocal action could be plainly marked. In fact, I am inclined to believe that if the patient's supply of stimulants during his convalescence could have been curtailed, the slight amount of huskiness present on his discharge would have been much less noticeable.

The plan of using a trachea tube and allowing the surface to close in with more or less rapidity has been suggested, but it has seemed to me that the method followed in the instance above outlined, provided the case can be watched, is much quicker and easier both for patient and surgeon.

Spinal Surgery.

Chipault (Rev. de Chir, February, 1896) reports three cases of successful operation on the spine. The first was one of partial compression of the cord by a fragment of bone detached from the left half of the eleventh dorsal vertebra. The chief symptoms were motor paralysis of the left lower extremity, anæsthesia of the right extremity, and loss of power of the sphincters of the bladder and rectum. On the eleventh day from the date of injury, after exposure by a long vertical incision of the lower portion of the dorsal spine, a projecting piece of bone was found, which consisted of the left lamina and a part of the left side of the body of the eleventh dorsal vertebra, which had encroached on the left half of the canal and compressed the corresponding portion of the cord and the nerve roots. This portion of bone was removed in fragments, the rent in the dura mater sutured, and the wound closed without drainage. The symptoms gradually disappeared after the operation, the patient was able to walk without any support at the end of the fifth month, and when last seen after an interval of two years and a half was quite free from any result of his injury save some weakness of the bladder and anus. The second case was one of extension of the fourth and fifth cervical nerve roots by a subluxation forward and to the right side of the fourth and the fifth cervical vertebra caused by a fall. The primary symptoms of weakness of all the limbs gradually subsided, but resulted in persistent motor

and sensory disturbances in the left upper limb, the muscles of the shoulder and arm being paralyzed, and the skin over the shoulder and along the outer surface of the arm and forearm very hyperæsthetic. Thirteen months after the accident the seat of injury was exposed, and the nature of the injury, which had previously been diagnosed, clearly made out. The displaced fourth cervical vertebra, which was movable and could be readily reduced, was fixed in its normal position by silver wire attaching its spine to the spines of the third and fifth vertebra. This patient also made a good recovery. At the end of the second year he was able to move his head freely from side to side, and the left upper limb had regained its normal strength, and was quite free from tenderness. The third operation was performed for the cure of very painful and persistent neuralgia of certain closely circumscribed regions of the right upper extremity. After the trial of many plans of treatment, both medical and operative, the patient was completely relieved after exposure of the cord in the cervico-dorsal region, and resection of the posterior nerve roots corresponding to the last two cervical and the first dorsal vertebra.—British Medical Journal.

The Duty Line in Medical Journalism.

The following excellent paper was read by Joseph R. Clausen, A. M., M. D., managing editor of the Times and Register, before the American Medical Publishers' Association, Atlanta, Ga., May 4, 1896:

The most carefully edited journals are not, as a rule, either the most popular or the most successful.

This is a discouraging statement to make, and the sadder for being true, for true it is.

Were the reverse the rule, two powerful incentives would exist for the more careful editing of our columns—popularity and profit; but, since this is not the case, it is duty, not business enterprise, that calls for a closer editing of copy and galley proof; nor from title page to the "ad" that disfigures the cover should anything escape this editorial scrutiny and revision.

It is hard, at times, to do one's duty, even when the plaudits of the populace, to say naught of their shekels, will in the end reward our efforts, but for an editor to conscientiously do his duty, recognizing at the time that in the doing of it he is lessening the popularity of his paper and the size of his income, is harder still. Yet it is the unflinching performance of this duty that we urge, insisting on it not alone for duty's sake, but because concerted action in this direction would soon restore medical journalism to the high eminence from which we feel it has fallen, and the faithful performance of the duty referred to would soon receive other and more substantial reward than virtue's own. In short, the entire situation would be changed and the best edited papers would at once be the most successful and popular.

It is high time that the duty line in medical journalism was drawn and universally recognized when, as a unit, the medical press shall say to the abuses that threaten its usefulness: "Thus far shalt thou go, and no farther." A line, too, that shall shut out the petty weaknesses that now impair its dignity and lessen its influence.

And what are these abuses, these weaknesses?

First, sensationalism—that bane of the newspaper press of to-day. Disguised, of course, in physician's garb, but none the less insidious in character, and all the more harmful in its influence.

Too great readiness to give space to the discussion of questionable theories, to the exclusion of sound, instructive argument in support of those that have been proven tenable.

A tendency to overshoot the intelligence of our readers, forgetting that we are writing to the many not the few, and that every general practitioner is not a specialist.

A disposition to, at least, passively, encourage professional "fads" simply because they are popular, instead of vigorously opposing them and mercilessly exposing them as fads.

A forgetfulness of the fact that we are, or are supposed to be, leaders of medical thought and not caterers to the perverted tastes of professional or literary epicures.

The ridiculous practice of expressing plain truths in such stilted, awe-inspiring language that the truths themselves are wholly obscured in the verbiage of words that clothe them.

A disposition to make our editorial columns subservient to the advertising pages, forgetting that even the negative endorsement of a medical journal has an influence that can scarcely be calculated and may be given a publicity by the advertiser that we ourselves would be most reluctant to have it given.

And last, but by no means least, the too frequent surrender to that potent factor—a yearly contract—and the acceptance of advertising that should have no place in the columns of a well-edited medical journal that respects the principles it professes to uphold.

We mean, in short, that the advertising columns should be as carefully edited as any in the paper, and that no preparation or article should be advertised that we cannot fully, intelligently and conscientiously endorse.

It is no new code of newspaper morals that we ask shall be adopted, but recognizing our high mission as the medical press of this country, that we return to first principles, those that combine honesty with common sense.—Times and Register.

Miscellany.

Relations of Medical Examining Boards to the State, to the Schools and to Each Other.

Dr. William Warren Potter of Buffalo, president of the National Confederation of State Medical Examining and Licensing Boards, chose this title as the subject of his annual address at the sixth conference of this body, held at Atlanta, May 4, 1896.

He said there were three conditions in medical educational reform on which all progressive physicians could agree, namely, first, there must be a better standard of preliminaries for entrance to the study of medicine; second, that four years is little time enough for medical collegiate training, and third, that separate examination by a state board of examiners, none of whom is a teacher in a medical college, is a prerequisite for license to practice medicine. It is understood that such examination can be accorded only to a candidate presenting a diploma from a legally registered school.

He further stated that a high school course ought to represent a minimum of academic acquirements, and that an entrance examination should be provided by the state for those not presenting a high school diploma or its equivalent.

He did not favor a national examining board, as has been proposed, but instead thought all the states should be encouraged to establish a common minimum level of requirements, below which a physician should not be permitted to practice; then a state license would possess equal value in all the states.

In regard to reciprocity of licensure, Dr. Potter thought it pertinent for those states having equal standards in all respects to agree to this exchange of interstate courtesy by official indorsement of licenses, but that other questions were of greater moment just now than reciprocity. Until all standards were equalized and the lowest carried up to the level of the highest, reciprocity would be manifestly unfair.

He urged that the states employ in their medical public offices none but licensed physicians. This, he affirmed, would tend to stimulate a pride in the state license, and strengthen the hands of the boards.

He denied that there was antagonism between the schools and the boards, as had been asserted. He said that both were working on parallel lines to accomplish the same purpose, that there could not possibly be any conflict between them and that they were not enemies, but friends.

The medical journals of standing, from one end of the country to the other, he affirmed, were rendering great aid to the cause of reform in medical education, and the times were propitious.

He concluded by urging united effort by the friends of medical education, saying that "the reproach cast upon us through a refusal to recognize our diplomas in Europe cannot be overcome until we rise in our might and wage a relentless war against ignorance, that shall not cease until an American state license is recognized as a passport to good professional standing in every civilized country in the world."

Vivisection.

From the minutes of the American Academy of Medicine for May 4, 1896.

(Advance sheet from the Bulletin of the Academy.)

The following resolutions, presented by Dr. Gould, and recommended by the council, were discussed and adopted unanimously:

Resolved, That the American Academy of Medicine desires to express its opinion that no legislation is required or desirable in the United States in regard to the so-called practice or subject of "Vivisection," and for the following reasons:

1. Because only by careful discrimination and collection of facts can public and legislative opinion be truthfully formed. To illustrate but a single of many popular errors upon this subject: the dissection or use of dead animals by scientific men is termed "vivisection," when the same proceeding carried out by the butcher, the hunter, the restaurant keeper, cooks, etc., does not enter into the consideration, neither do the cruelties in the use and keeping of domestic animals, nor those in the deaths of animals for other purposes than those of experimental medicine.

2. While admitting and deploring the facts of abuses in the past and in some European countries—to a very limited extent also in America—it is the conscientious belief of the members of the academy that at present with us such abuses do not exist, nor are they in danger of occurring, to a degree justifying or calling for legislation, as, under the circumstances, the evils that would inevitably result from such legislation would greatly exceed the benefits to be obtained by it. The charge implied or openly made that physicians, either in theory or in practice, are more cruel than other classes of the community, is a fancy or prejudice of ignorance which cannot be proved, and which we strenuously deny.

3. Legislation upon the subject of cruelty to animals should be so framed as to include consideration of cruelties infinitely greater and more extensive in many other fields of human activity at present not actively objected to by those who urge legislation as regards ex-

perimental medicine. Not only this, but legislation concerning these matters should be broadened out in order to prevent the destruction of species of birds and other animals by the votaries of fashion, by the hunters, etc., to prevent derangement of the delicate balance of animal and vegetable life upon which civilization ultimately and largely rests, to prevent deforestation of the headwaters of our streams, to establish sanctuaries or resorts for animals, and many such biologic requisites, as also to establish such arrangements with other nations as will insure their permanent and extensive effectualization.

4. Legislation upon a subject of vital importance to a peculiarly technical branch of science should be framed under the guidance and by the aid of those who by education and experience are alone fitted and capable of forming and expressing sound judgment upon it, i. e., the experts in the special subject. It would be as absurd to have legislation as to vaccination, inspired and shaped by laymen who were anti-vaccinationists, without weighing the opinion of the medical profession, as to allow legislation upon the question of vivisection by laymen who are anti-vivisectionists, and even inexpert in any branch of inductive science.

5. The American Academy of Medicine therefore urges its members and physicians generally to write to their representatives in Congress (or wherever legislation of the kind in question is proposed), and otherwise seek to influence public and official opinion against the passage of a particularly ill-advised bill before congress, to-wit, senate bill No. 1552, introduced by Mr. McMillan, entitled "A Bill for the Further Prevention of Cruelty to Animals in the District of Columbia." In the opinon of the academy the passage of this bill would be harmful to the true interests of medical and social science and to the public health.

An Appeal.

O wondrous Doctor Roentgen, sir, I beg you'll quickly say
Just what you deem the limits of your marvelous new ray.
For I'm a struggling writer, and I may have use for it,
If some day it will penetrate another mortal's wit.

I've worked and worked for many years, with not a jot of fame;
My stories are but echoes, so they tell me, echoes tame.
I'm but an imitator of a truly abject kind,
And all because, Herr Doctor, I've no ideas in my mind.

And when I see my brothers in the contest for the bay
Pass by me as the tortoise left Br'er Rabbit on the way,
It makes me most unhappy to reflect that 'tis my fate
To copy, copy all my days, and ne'er originate.

But you may prove a blessing if you'll get that ray of light
Developed up to such a point that it will bring to sight
The germs of thought that lie close hid in favored craniums,
Like those of Mr. Kipling and the Poet of old Thrums.

If I could turn that light on them and see what they've in mind
To put forth in the coming years, what nuggets should I find!
And should I ply with industry this dullard pen of mine,
With their ideas I'd get a hold on Fame with every line.

So, Doctor, pray do not abate your efforts with your light
Until you've got it to the point of which I've tried to write.
I do not wish to plagiarize—from that I would desist—
But I would be, to coin a term, a Roentgenraygiarist.

—John Kendrick Bangs, in the Lotus.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate: situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address 'BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

The Railway Surgeon

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NEPHRITIC CALCULUS.*

By W. S. Caldwell, M. D., Freeport, Ill.

That greatest of American teachers, Prof. Gaylord Thomas, was in the habit of exhibiting before his class a confused looking female, whose case illustrated the subject of his day's lecture, and though none of us ever examined this woman, her presence before us helped, in a marked degree, to impress upon our minds the subject matter that fell from the lips of this great master. So I hope to-day that the interest in the paper that I am about to read to you will be fortified in a way and its monotony and want of merit obscured, in part at least, by the increased interest that you will take in the subject, from the fact that you have before you, in my own person, a patient who was for years the victim of the disease upon which I propose to discourse.

The history of my case dates from a period that is coeval with my earliest recollection; and as the operation for its relief was performed when I was in my 64th year, I believe that I am warranted in the assertion that I carried this calculus longer than any other authentic case on record, where the diagnosis was confirmed by the removal of the stone from the kidney. Up to my 18th year the paroxysms of pain came on at irregular intervals, varying from a week to two or three months.

Between these attacks I was well and strong and prided myself upon the fact that I could ride the wildest horse and could outrun anyone of my age. The pains came on suddenly and were most excruciating in character.

To relieve these paroxysms, my father, who belonged to the most orthodox of the old school in medicine, although he had no definite idea of the true nature of my trouble, gave me

*Read at the ninth annual convention of the National Association of Railway Surgeons, at St. Louis, May 1, 1896.

calomel and bled me on general principles. Between the ages of 17 and 21 I was tolerably free from suffering, though I always had a sensation of weight and soreness in the lower portion of the lumbar region on the left side. About this time I quit school and chopped wood for a month. The violent movements of the muscles of the back and the friction upon the kidney itself, that this unaccustomed labor involved, rekindled my old trouble with a tenfold intensity, and I was compelled to take to my bed, where I lay for six months, free from pain only when under the influence of large doses of opium. During this time I had one severe attack of hæmaturia.

The best medical counsel that I could procure diagnosed my case as one of simple neuralgia, and one of them believed that quinine in sufficiently large doses would cure me, and of this drug I took one ounce in eight days, the only effect of which was to render me nearly deaf for a month after I discontinued its use. At the end of this period I left my bed and by the aid of one or two doses of opium every day was able to pursue my studies in medicine and teach school in the intervals to defray my expenses. At Ann Arbor, Professors Gunn and Ford thought my case to be one of a deep abscess produced by some lesion of the vertebral column and tortured me by making a deep exploratory incision. For a period of many years after I began the practice of medicine I suffered moderately every day with severe exacerbations that could not be relieved by opiates, and I had to resort to the inhalation of chloroform, of which I would often use as much as from 4 to 6 ounces in a few hours.

In the spring of 1866 I went abroad for the purpose of rest and study and to get counsel of the best men in Europe in relation to my case. In London every man I consulted said my suffering had no relation to my kidneys. The great Dr. Syme of Edinburg said I had an aneurism of the left iliac artery and was likely to die suddenly at any moment. One of the objects I had in view in taking a trip abroad was to quit the use of morphine, which I thought I could do, when I could quit work and take things quietly. The effort was a failure, but years later, after having taken opium for five years and morphine for 15 years, I gradually discontinued the use of the latter while doing 16 hours hard work every day. As a pointer in the management of cases of the morphine habit, let me suggest giving your patients coffee and milk every hour and keeping them busily at work.

In the early seventies I spent two winters in New York City and consulted such men as the elder Flint, Alonzo Clark, Hamilton, Willard Parker and Van Buren, all of whom said I had no kidney lesion and no renal calculus. The thermo-cautery at that time was a new fad and Dr. Sieguin burned my back three times a week for months together. At the time I consulted these eminent men in New York I had a firm conviction in my own mind that I was suffering from a renal calculus, but when no pus could be found in my urine, coupled with the fact that I was doing a large practice, mostly on horseback, which exercise did not seem to aggravate my symptoms, I was told flatly that such a condition of things as I suspected was not possible. What these men overlooked in my case was the fact that the stone I was carrying was encysted in the substance of the kidney, and, being fixed, the concussions of the body incident to horseback riding did not affect me.

In the spring of 1877 I went to Vienna, to pursue my studies and, among other private courses, took one given on the diseases of the genito-urinary organs in the male, by the late Prof. Ultzman. About this time I had my second attack of hæmaturia. I called Ultzman and he diagnosed my case as one of renal calculus, the first opinion of the kind I had ever gotten, though I had up to this time consulted the best men on two continents. Though one of the best authorities living at that time on bladder and renal troubles, he did not even suggest an operation for the removal of the stone that he was quite sure was the source of all my suffering. In fact, the surgery of the kidney was at that time in its infancy. I went on for the next decade and a half, with little change in my symptoms until, in the spring of 1895, I jumped from a moving train at night, was thrown to the ground with great force and was terribly shaken up. From this time on the pain I suffered was increasel in a tenfold degree. I had no ease day or night and had again to resort to morphine, from which I had abstained for nearly twenty years.

I went to the northern lake resorts, hoping that rest and quiet might afford me some

relief, but I only grew worse. I therefore determined to submit to an operation, which was performed on the 19th day of September last by Drs. Danforth, Murphy and Steele of Chicago and Dr. Stealy of Freeport, who removed the stone I now show you.

On the fourth day after the operation I was taken with a violent chill, followed by a high fever that came near carrying me off. Suppuration around the stitches that were employed to partly close the incision in the external wound was the cause of the infection from which I suffered, an illustration of the difficulty if not impossibility of disinfecting the cutaneous surface.

There is probably no field in surgery that has been so enriched and widened in its scope during the last two decades as that of the surgery of the kidney. It is true that even Hippocrates and his pupils speak of, and advise nephrotomy, but they limited the operation to cases of nephritic abscess that pointed upon the back and were ready to open themselves. Through these openings sometimes calculi passed. The earliest recorded case of nephro-lithotomy was performed by an Italian surgeon in the early part of the seventeenth century upon a Mr. Hobson, a British consul at Venice. It was done by the extra-peritoneal lumbar incision, and though the patient exhibited himself to the London surgeons, who did not doubt the skill and success of the operation, none of them were brave enough to repeat it. A Mr. Paul, a surgeon living upon the Strand, is said to have removed a stone as large as a pigeon's egg, from a woman's kidney, in 1733, but whether or not this stone had nearly reached the surface by a process of ulceration, we are not able to determine.

How new the subject of nephrotomy, as practiced to-day, really is, is shown by a paper read by Mr. Thomas Smith before the Royal Medical and Surgical Society of London on the 27th of April, 1869, the subject of which was, "Nephrotomy as a Means of Treating Renal Calculus." Mr. Smith's paper was from beginning to end simply interrogative in character, not urging or recommending the operation at all, and he closed by advising anyone who proposed to do the operation, to first operate on a dead subject who had died of renal calculus. Mr. Holmes, Callender and Spencer Wells all took part in the discussion of this paper and all were as reserved and guarded in their views as to the advisability of the operation as was the author of the paper himself. In the second English edition of Holmes' work on surgery, issued in 1871, a work at that time the peer of any treatise on this subject in any language, nephro-lithotomy is not even mentioned for the relief of renal calculus. He treats of chronic suppurative pyelitis, and says it may be caused by a calculus, but only advises a resort to the knife when an abscess has formed, and points in the direction of the loin. In the edition of Gross' Surgery for 1872, speaking of nephritic calculus, he says: "When the stone is large and productive of incessant pain nephrotomy has been recommended, but such a procedure could only be thought of when the concretion was of immense bulk or when it had worked its way partially through the loin by ulceration." In 1870 Mr. Bryant did an operation for renal calculus at Guy's Hospital, but found no stone and his patient died of the operation. About this time the history of a case is related in which a surgeon poulticed his patient's loin until one day, when changing the dressing, he found the stone upon the poultice, showing the extreme timidity of surgeons at that date in their dealings with the kidney. Mr. Henry Morris of London claims that he, in 1881, did the first nephro-lithotomy for the removal of a stone from a kidney not the seat of an abscess.

In a given case of supposed renal calculus what are the diagnostic symptoms upon which we can rely? Unfortunately, there are none. Absence of all symptoms does not prove that a patient has not a stone in his kidney. I have in my possession over twenty small calculi that were removed from the kidney of a patient in the dead house in Vienna who died of acute pneumonia and who had, during his life, no symptoms of a renal character. Pain and hæmaturia, so much relied upon, are misleading for they may both originate from a variety of causes, not connected with any kidney lesion whatever. In my own case, the situation of the pain was misleading, for it was severest at the upper part of the sacro-iliac junction, and never radiated down the course of the cord into the testicles; as to hæmaturia, I had only two attacks in half a century.

Dr. Henry Morris gives the history of 28 cases where the symptoms pointed to the exis-

tence of nephritic calculus and in which a nephrotomy was done and in none of which a stone was found. In eleven of these cases the operation developed absolutely nothing to account for the symptoms. In the others simple displacement existed in some and tubercular abscess in others. An eminent surgeon, with more tact than honesty, advises that when you are about to operate for vesical calculus, you should always have a stone in your pocket to show your patient in case you find none in his bladder. If such a course be advisable in an operation on the bladder, it is doubly so in one done for stone in the kidney.

In view of the uncertainty of diagnosis the surgeon who does a nephrotomy must look upon his operation in the first instance as one simply of an exploratory character. With all that can be said in relation to the advances in kidney surgery within the last few years there are many points in regard to the technique of the different operations upon this organ that are far from being settled; and if one was asked what the classical procedure in any given case should be he would be at a loss to give a positive answer. To expose the organ, however, whether for the purpose of doing a nephrectomy or a nephrotomy, a majority of operators resort to the lumbar incision, viz., laying open the parts from the lower border of the last rib to the crest of the ilium, following as a guide the inner border of the erector spinea muscles. Whatever form of incision is used it should accomplish thoroughly one object, and that is the complete exposure of the organ upon which we are about to operate, so that if necessary it can be examined in its entirety. If, after we have exposed the kidney so that we can palpate every part of its surface, our examination fails to locate the stone that we suppose to exist, what will be our next step in the operation? Here again authorities do not agree. Many advise the use of an exploring needle, which, being introduced at different points deeply into the substance of the kidney, enables us to locate accurately the situation of the calculus. This I believe to be a reprehensible practice, for we are likely, by this maneuver, to do damage to the delicate structure of the organ, and besides if, after practicing this kind of an exploration, we are not able to locate the stone, we would not be justified in abandoning the operation until we had opened up the kidney and explored every part of its cavity by a digital examination; therefore, I believe that all needling in this operation is superfluous and likely to be harmful.

Another point upon which authorities are at variance is the most desirable portion of the kidney in which to make our incision, if the location of the stone is such as to give a choice. Some claim that a fistula is much less likely to follow the operation if we cut through the body of the organ, than if we cut directly into its pelvis, while others claim that the wound will heal with equal facility whether made in one location or the other. A part of every nephrotomy, if done for the removal of a stone, should be a thorough exploration of the ureter to determine whether or no this canal is perfectly patulous. Whether, after opening up the kidney and removing the stone, we should close up at once the incision in the substance of that organ or pack it and allow it to heal by granulation, is a question upon which authorities do not agree. Köenig, in his late work on surgery, advises the primary closure of the wound if there be no suppurative pyelitis or other septic process connected with the case. However, his statistics show that a permanent fistula is as frequent in the one mode of operation as in the other. In the 27th vol. of Langenbeck's Archiv Für Klinische Chirurgie, Dr. James Israel, in his exhaustive article, "Erfahrungen Ueber Nieren Chirurgie," gives four cases of nephro-lithotomy in which he closed up the incision in the kidney immediately by cat-gut sutures and in none of these cases was there a single drop of urine passed through the wound after the operation. He gives explicit directions that the two cut surfaces of the kidney should be firmly held together by an assistant while putting in and tying the cat-gut so that as little strain as possible will be brought to bear upon the delicate tissues of the kidney. Two months after one of these operations he had to do a nephrectomy on one of these patients on account of an irreparable injury to one of the ureters, and he found the incision that he had sewed up in the kidney so accurately adjusted and healed that it was scarcely possible to detect the slightest cicatrix. On the contrary, Prof. Fenger of Chicago, who is one of the leading authorities on kidney and ureteral surgery in America, does not believe that a kidney, the

seat of a calculus, can be in an aseptic condition, and therefore rules out Köenig's limitation as regards the primary closure of the wound after a nephro-lithotomy. This eminent authority relates a case in which the patient died, evidently as the result of the primary closure of the wound, and has entirely abandoned this mode of operating. He now uses drainage exclusively and allows the parts to heal by granulation.

One of the greatest obstacles to the early progress of renal surgery was fear of the hemorrhage that was likely to follow any incision into this organ, and to avoid this accident some surgeons even now resort to the thermo-cautery. Operators generally open up the kidney with a blunt, pointed instrument, or the finger, and Köenig says that any bleeding can be controlled by fine cat-gut sutures.

In doing a nephro-lithotomy in cases where the kidney has undergone an extensive degeneration owing to the presence of suppuration the question of the removal of the entire organ is one that often presents itself to the surgeon. A revolution has taken place in this field during the last few years almost as great as that in regard to the removal of the ovaries; kidneys are now drained and left that a decade ago would have been sacrificed, thanks to the new discoveries that have been made as to the power of this organ to regenerate itself, even when a large part of its substance has been destroyed. In 1878, while following the work of Prof. Martin in Berlin, I saw him remove a good many kidneys for no other cause than that they were displaced and that the patients suffered from the usual symptoms that accompany this trouble, a procedure that this great surgeon would not think of to-day.

In the history of thirteen cases of suppurative nephritis, given in the St. Bartholomew hospital reports, where nephrectomy was done, it is stated that eleven died, but in the two cases where the operation was abandoned and the kidney packed and drained, the patients recovered; an example of the superiority of conservative surgery as applied to our dealings with the kidneys.

DISCUSSION OF DR. CALDWELL'S PAPER.

Dr. James T. Jelks: It has not been many years that surgeons would undertake any operative interference in kidney troubles, or upon calculi within the kidney. It should be the dictum that every man with kidney calculus should be subjected to operative interference to get rid of it. There is no middle ground; no hope for the patient outside of surgical interference.

I had the pleasure of seeing a case with Dr. Murphy where a man had been carrying a calculus for months, but he will not continue to carry it. The probabilities are that he will submit to a radical operation for its removal. We should settle the point in our own minds firmly that there is no middle ground; that medicines cannot reach these cases; that nothing we can give the patient will dissolve a stone in the kidney or bladder. There is but one way to remove it, viz., by operation. As a matter of course, if we undertake to remove a calculus from the kidney it should be by the lumbar operation. There is one trouble we have to contend with, viz., that when we open the kidney for calculus we sometimes do not find it. We should bear in mind the fact that in many cases of calculus of the kidney the pain is not in the kidney, which is the habitat of the stone. In other words, we have a crossed pain, so to speak. The man may complain of pain in his right kidney and have the stone in his left. We can make a differential diagnosis by palpation, and can settle the point as to which kidney is involved, outside of the patient's complaints, by taking each kidney between the fingers and resorting to bimanual manipulation. This will settle the diagnosis. Having done so, the question then is one of operation, and the authorities of the profession have decided that the operation upon the kidney should not involve the pelvis, but should go through the tissue of the kidney proper, because of the fact that if the operation is made in the pelvis of the kidney it is always followed by fistulous tracts and we subject the patient later to nephrectomy, and we may happen to remove the only kidney the patient has had.

Our president has reported two cases upon which he has operated, and removed two stones by cutting through the pelvis and stitching up the parts, getting union by first intention. We may explore the calices of the kidney and find the stone with our fingers, but not with the needle. The finger is the best probe we can use. Then, making an incision in the pelvis of the kidney, we may explore the whole body of the organ, locate the stone and

remove it through a cut in the kidney tissue. We will have considerable hemorrhage, as a matter of course, but it is easy to control it by a little pressure.

When we find a man with a uric acid diathesis and a history of nephritic calculi, and the calculi have been emitted by passing from his bladder, we should teach him so to live as not to have any more trouble with nephritic calculus. We can prevent the formation of nephritic calculi by teaching people how to live; that is, to get rid of their uric acid or oxalated lime as fast as it accumulates. In the winter time we manufacture more uric acid than we discharge and store it in the economy. In the summer time we are supposed, by the sweating we undergo, to throw off the uric acid, hence the balance is kept between winter and summer. We should teach patients so to live that the output will equal the manufacture. When people come to us with a history of having had renal calculus and colic, we should absolutely prohibit their partaking of meat, particularly until we have eliminated the stored-up uric acid by the administration of salicylates and alkalies. These patients should be put upon a vegetable, milk and fruit regimen. After a preliminary course to dissolve the stored-up uric acid, we can promise a patient that he will have absolute relief in the future from renal colic.

ARTIFICIAL CLIMATE FOR TUBERCULAR CASES; IS IT PRACTICABLE?

By Dr. H. C. Himoe, Kansas City, Mo.

In entering upon the consideration of this subject, I am aware that I will be met with opposition, on the ground that the scheme I am about to propose is a chimerical one; but I am convinced that it is only by a thorough discussion of any subject, that we can arrive at definite conclusions as to its practicability, and that it is only by a free and open argument of the subject in hand, that we can formulate definite plans for the amelioration of that most unfortunate class of human beings—sufferers from tuberculosis.

First, we are led to inquire, what it is in climates that gives immunity, at least in part, from the terrible sufferings of tubercular patients, and, in some cases, performs a cure. The essential features, that give this relief, in such a climate are: dryness of atmosphere and the presence in it of large quantities of ozone, that life-giving principle that conduces to a healthy condition of the lung tissues, and enables them to throw off the morbid products of disease and resist a further invasion of disease germs. Those physicians who have practiced in a climate where cases of tuberculosis are finally sent, are at once impressed by the almost hopelessness of many cases that have been sent on long, exhausting journeys, when their vital powers were already well nigh spent, either to die en route (as I have too often witnessed), or, even if they should arrive at their journey's end alive, to succumb sooner or later to the terrible ravages of the disease, far from the comforts of home and the ministrations of loving friends. I do not mean, in this connection, to disparage the several climates that are lauded as the sine qua non for cases of tuberculosis, but merely to point out the countless errors that are made by well-meaning and learned physicians, who send their dying tubercular cases to climates many hundreds of miles away. They sometimes think it is their only recourse, and their mistakes are rather "of the head than of the heart." When we recall that tuberculosis originates in these very climates, paradoxical though it may seem, among people who were born and raised there and have never been away from home, is it any wonder that so many who go there in search of health find only a sad and lonely death? Such, alas! is the truth, and although well meant on the part of the physician, it has always seemed to me a cruelty to send these poor unfortunates thus away to die.

It is useless, however, to point out an evil without suggesting a remedy, and this I will attempt to do without trespassing too much upon valuable space.

"Charity begins at home"—that goes without saying, and, no doubt, philanthropists can be found who will hasten to contribute their means to a plan that will at least mitigate the sufferings of their fellow-men, if, indeed, it does not contribute to the cure of that dread disease.

It is a well-known fact that the majority of sufferers from tuberculosis seek a change of climate only when it is too late to stay the

progress of the disease; some, because they hesitate to leave the comforts of home, to live alone many miles away; others, because they have not the means to procure such a change. The latter class comprises by far the larger number of tubercular cases.

Now, I firmly believe that, by the construction of immense buildings, covered in part by roofs of glass to admit sunlight in abundance; containing an atmosphere which has been purified, filtered and dried, kept at an equable temperature, and constantly renewed by means of appliances similar to those used for the ventilation of certain factories—an atmosphere that is charged with ozone in definite quantities by using modern electrical contrivances we have a solution of this most important question. These conditions furnish all that changes of climate accomplish; that much must be admitted. There is no specific principle in mountain air that destroys the tubercle bacillus.

By the plan suggested, cases of tuberculosis could be properly isolated, they would not be banished like lepers from their friends, who will never see them alive again, and, being taken in their initial stages, would give some promise of ultimate cure.

It has not been my intention to enter into detail of construction of these mammoth sanitariums, but merely to call the attention of the profession to a question that demands their most earnest attention, and the consummation of which would be hailed with delight, not only by themselves, but by humankind with one accord the world over.

The advantages claimed for this system are:

First: Cases would be taken at their inception and hence give greater promise of a cure.

Second: A greater number of those afflicted with tuberculosis would be able to avail themselves of the treatment by climate.

Third: Isolation would be complete, and the spread of tuberculosis by infection would be reduced to a minimum.

Fourth: Patients would not have to travel long distances from home and be separated from their families.

Fifth: Patients would not be subject to the vicissitudes of weather that are invariably encountered in all climates.

Sixth: The time required for a cure, in favorable cases, would be much less.

SOME AMPUTATIONS PERFORMED DURING THE PAST YEAR.*

By Howard J. Williams, A. M., M. D., Macon, Ga.

Since March 26, 1895, I have performed nine major amputations on eight patients, and as many more of minor interest. Five were for traumatisms and four were for disease. The former were railroad injuries; of the latter two were in cases of chronic ulcer; one for tuberculosis of the knee, and one for conical stump. Two were reamputations; one a double amputation, and one a shoulder-joint operation. Recovery followed in all, primary union failing in three.

The first case I present is an amputation of the thumb and two first fingers with all the corresponding metacarpal bones. While not generally considered a major operation, it was more extensive than an amputation in the middle of the forearm, and certainly more difficult.

CASE I—COMPOUND FRACTURE OF THE LEFT HAND, WOUND INFECTED WITH MAGGOTS, GANGRENE.

Henry B., male, 26 years of age, negro coupler, was injured while coupling cars July 26, 1895, near Lumber City, Ga. He was transferred to Macon and placed in the hospital July 27. The wound had not been entirely covered, nor had any antisepticism been used, hence it was infected with maggots when received in the hospital eighteen hours after the accident. The wound was undressed and efforts were made to remove the maggots with chloroform, carbolic acid, etc. On the third day gangrene began, blebs forming on the fingers. The temperature on admission was 102, on the third day it reached 104.4. It then gradually declined and by August 10 was normal.

August 27 the line or demarcation having completely formed, with the assistance of Dr. McHatton I amputated the thumb, first two fingers and corresponding metacarpal bones, The anæsthetic was ether; antisepsis was observed, but no drainage used. A small slough formed on the dorsal portion of the wound. The patient was dismissed from the hospital Sept. 12, 1895, with the wound granulating at the point of sloughing, and the ring and

* Read before the Central of Georgia Railway Surgeons' Association, at Augusta, Ga., April 14, 1896.

little fingers bent and permanently ankylosed.

This case illustrates the results that will follow carelessly applied primary dressings. The wound, though extensive, would never have become gangrenous if it had been completely covered with proper antiseptic dressings. One-half of an inch being exposed to the air, it was promptly fly-blown, hence the gangrene. The bones of the thumb and fingers were broken, but had antisepsis been used and the hand placed on a splint, there would have been a good chance of saving the fingers. We thought for a time that the entire hand would have to come off, but by waiting and watching the case, we were able to save a portion of it. The remaining fingers are ankylosed, yet the man gets considerable use out of the stump, carries his dinner basket and uses it in various ways.

CASE II—COMPOUND COMMINUTED FRACTURE OF THE LEFT HAND.

Wm. H., male, 25 years of age, negro coupler. This man was injured while coupling cars, Oct. 26, 1895, at 3:20 a. m., at the Macon yards. He was admitted to the hospital and the operation was performed at 6 a. m. The hand was amputated two inches above the wrist. The anæsthetic was ether; antiseptics were used but no drainage. The temperature when the operation was performed was 98.6; on the second afternoon it was 102, and rapidly declined, being normal the next day. The dressings were removed on the eighth day, primary union being found, except in one point, from which was discharged an aseptic mucilagenous fluid. On the twelfth day the patient was dicharged, with primary union.

The interest in this case rests upon the fact that no drainage was used, and that on opening the dressings on the eighth day, a thin pinkish mucilagenous discharge escaped from the wound. This was not pus, nor was it septic, simply a change in the consistency of retained exudations. I am never alarmed by this discharge, as it occurs often when no drainage is employed, and it does not interfere with union.

CASE III—COMPOUND COMMINUTED FRACTURE OF LEFT FOREARM AND ARM—LIMB CRUSHED OFF.

Chas. S., male, 18 years of age, negro, a driver of a baggage wagon, fell from his wagon, his arm being caught under the wheels of a slowly passing engine, on March 26, 1895, at 10 p. m. He was placed in the hospital and an operation performed at midnight. The amputation was two inches below the shoulder-joint. The anæsthetic used was ether. Antiseptics were employed, but no drainage. The temperature was normal when the operation was performed. It was 102.4 twelve hours later, and gradually declined by the third day. Dressings were removed on the sixth day and the stitches taken out. The wound was uniting. Patient was discharged on the fifteenth day, primary union being the result.

The point at which this operation was performed is the more interesting feature, viz., near the shoulder-joint, and not in it. If it is possible to avoid an operation in this joint, it is our duty to do so. For by so doing we preserve the symmetry of the shoulder, and add to the comfort of the patient, as the stump aids in holding the clothing in place. Had the engine been moving rapidly, it would have been necessary to go into the joint, as the destruction of the tissues above the point of crushing by the wheels would have reached even up to the axilla. My flaps were very near the crushed tissues.

CASE IV—DOUBLE OPERATION—COMPOUND COMMINUTED FRACTURE LEFT LEG, AND COMMINUTED FRACTURE OF RIGHT FOREARM.

Wm. H., male, 32 years of age, negro tramp. This man was injured by falling under the car wheels, while stealing a ride near James Station, Ga., on Nov. 13, 1895, at 8:30 p. m. I was telegraphed for next morning and found him lying on a mattress in the agent's office, his foot bound up in old cloths, but no dressings on the arm. The operations were performed in the agent's office. Amputation of the leg was made at the junction of the middle and lower third; the arm was amputated in the lower third. The anæsthetic was ether. Antiseptics and drainage tubes were used. The temperature at the time of operation was 100 degrees. The patient was made comfortable for the time in the office, and transferred the next morning to his home at Thomson, Ga., 75 miles further down the road. As the company was not liable for his injury, he was

then turned over to his own physician, Dr. Sterling Gibson. From this gentleman I learned by letter, that he was doing well ten days later; the wound was uniting, he had no fever, and was sitting up in bed. He made an uneventful recovery.

The injury to the foot was simply a complete crushing off through the ankle-joint; the injury to the arm, while there were only a few external signs, was more extensive. The skin was slightly torn near the elbow; the bones of the forearm, from the elbow down to within three inches of the wrist, were badly comminuted, being broken into fifteen or sixteen small pieces; the muscles were pulpified, and the arteries from the elbow down were destroyed. When I arrived, the forearm was cold and pulseless, the skin from the finger tips to one inch above the elbow joint was blacker than that of the rest of his body. This case illustrates how extensively the organs and tissues beneath the skin may be injured with little or no evidence externally. In such a condition gangrene will inevitably follow, and perhaps death, if an attempt is made to save the limb. Several years ago I saw such a case which ended in death. It was a case of comminuted fracture of the femur, extending into the knee-joint,and injuring the popliteal artery, without laceration of the skin.* A tramp was caught under car wheels. I dressed his limb temporarily. He was then sent to the county poor-house, and an attempt made by the county physician to save the limb. Five days later, when gangrene had advanced extensively, amputation was performed, but the patient died twenty hours later. Had a primary operation been performed, no doubt the man would have recovered.

CASE V—TUBERCULAR ANKYLOSIS OF KNEE-JOINT.

Arthur W., male, 13 years of age, white, school boy. Records of family history showed that a grand aunt had hip-joint disease. Seven years ago this boy had knee-joint disease which left the knee dislocated and ankylosed. His general health since then had been good. The tubercular process had been arrested for six years, but recently he had had pain and some swelling in the joint, which alarmed his family.

Amputation was performed at the junction of the middle and lower thirds of the thigh, on Jan. 7, 1896. Antiseptic dressings and drainage tubes were used. Anæsthetic was ether. Temperature, morning of operation, 100.2. The next morning it was 101, then gradually declined and on fourth day it was 98.6. The tube was taken out on the third day; dressings and stitches removed on the eighth day; primary union; discharged from treatment on the fifteenth day.

I first saw this lad six years ago in consultation. The tubercular process had about completed its ravages, the joint was destroyed and sinuses had formed, but the joint was not ankylosed. With Dr. McHatton, who also saw the case in consultation, I advised immediate amputation, as the destruction had been too great to expect any benefit from excision of the joint. Our opinion was rejected and he was placed in charge of a physician, who promised a complete cure with every motion preserved, with the result above stated—dislocation and ankylosis. When the case came back to me six years later, the limb was destroyed and fearing return of the trouble, amputation was readily accepted. Dissection of the joint after removal of the limb, disclosed a tubercular focus beginning in the tibia.

Operation by the circular flap method is my choice in all amputations. In this case I modified it by making a rather oval flap, beginning lower down on the anterior surface of the thigh, and slanting the incision upwards, so that on the posterior surface it was about two inches higher up. This gave, on recovery, a stump that has a smooth, rounded surface, anteriorly to support the pressure of the thigh against the socket of an artificial limb. The scar, which is slight, is thrown backward, where there is no pressure in using the artificial limb. The cushion over the end of the bone was carefully strengthened by nice adjustment of the subcutaneous tissues by buried catgut sutures.

CASE VI—CHRONIC ULCER OF LEG AND KNEE, FIBROUS ANKYLOSIS OF THE JOINT.

Benj. L., male, 62 years of age, negro laborer, was scalded in childhood on the right leg and foot, leaving the ankle stiff, the knee partially ankylosed, and the toes amputated. Later on an ulcer formed on the outer side of the leg and knee in the cicatrix. This would partially heal and break down for a period of

* Reported in a paper for the National Association of Railway Surgeons, and published in the "Railway Surgeon" 1894.

forty years. As age advanced, his health became undermined. His arteries took on calcareous degeneration, digestion failed; and to save his life he wished the limb amputated. The urine had a specific gravity of 1026; no albumen; no sugar. There was no long complication. He was admitted to the hospital Sept. 19, 1895, and on September 20 I amputated in the middle third of the thigh. The anæsthetic was ether. Antiseptic dressings and drainage tube employed. During the first week his temperature varied daily between 98 and 100.4. During this time he was very much depressed, requiring persistent stimulation. The drainage tube was removed on the third day, and on the eighth day the stitches were taken out; primary union. On the eighteenth day he was discharged, walking out of the hospital on crutches.

The interest in this case rests upon the long history, 40 years duration, without any systematic complication, except atheromatous degeneration of the arteries. The blood vessels were so hard and brittle that I preserved a specimen (exhibited). When ligating the femoral, I did not apply the ligature directly to artery, fearing it would break the walls. With a large needle threaded with catgut, I went one-half to three-quarters of an inch above the end of the vessel, through the muscles and other tissues; with this, as a puckering string, I tied down the tissues, forming a cushion around the artery and so occluded its lumen. I had no secondary hemorrhage. I encountered this same condition several years ago and had much trouble from the ligature breaking the vessel, and finally only controlled the bleeding by the same method used in this case.

CASE VII—CHRONIC ULCER OF THE RIGHT LEG OF TWENTY-TWO YEARS DURATION.

Ella W., female, aged 37 years, white, single, no occupation; has no specific history but is of scrofulous parentage. When 15 years of age she struck her right leg, outer surface, against a rail in climbing a fence, producing a slight wound, which never healed, but gradually extended until an ulcer, 6x10 inches in dimension, and one-fourth to one-half an inch deep, had formed. This never grew better, notwithstanding various methods of treatment. Though only 37 years of age she presented the appearance of a woman of 60 years, thin, shrunken, wrinkled, skin yellow and waxy, evidently a victim of amyloid degeneration.

She was admitted to the hospital Nov. 1, 1895, under Dr. H. McHatton, who was then on surgical duty. The urine had a specific gravity of 1010, contained a trace of albumen and some tube casts; no heart or lung complication. She was placed on tonic and alterative treatment. November 25, under strict antisepticism, Dr. McHatton amputated the limb in the lower third of the thigh. The anæsthetic was ether; drainage used. Coming out of the ether she vomited persistently for four days. The temperature was normal, and there was no pain. The drainage tube was removed on the third day. On the eighth day the dressings were changed and we were surprised to find no union whatever, the wound discharging two or three ounces of thick pus. The flaps gradually melted away, without any apparent inflammatory reaction, each day growing shorter and shorter, until the end of the bone covered with thick, unhealthy granulations protruded an inch and a half beyond the flesh. Nothing would arrest the destruction.

She remained in this condition until Jan. 1, 1896, when I went on duty. She was put on ferri et potassii tartratis, and local applications, under which treatment she began to show general improvement.

January 27 I reamputated, or rather resected the end of the bone, without disturbing the granulating tissues at the end of the stump. Anæsthetic, chloroform; antiseptics and drainage tube used. Cutting down upon the bone I passed a chain saw around it and sawed through. The bone was then peeled out and the incision sewed up with silk. No vomiting followed the use of the chloroform. Primary union took place in the incision and shortly after the granulating end of the stump closed up. She was discharged Feb. 26, 1896, recovered.

This case was an exceedingly interesting one, In case number seven we have a chronic ulcer of forty years duration in a negro, without any constitutional involvement; in this case we have an ulcer of twenty-two years duration in a white woman, with amyloid degeneration. Thorough antisepticism was used in both amputations, primary union occurred in the first, sloughing following the second. Catgut was used in both operations for ligatures

and sutures. The negro had fever during the first few days, the white patient had normal temperature throughout the entire time, she had no pain in the stump during the first week and but slight odor before the first dressings were removed on the eighth day. During the amputation both Dr. McHatton and I noticed a peculiar condition of the subcutaneous tissues and muscles; the former was of a bright orange yellow, color unlike healthy subcutaneous fat, while the muscles resembled beef which had been exposed to the air for several hours, bluish and glazed, the fibers being extremely tough.

On opening the wound on the eighth day, and finding so profuse a suppuration and no effort at union, we were disposed to blame the catgut, but this was negatived by the fact that in a castration I had performed three days previously, I had used some of the same gut without any untoward results. Nor could we find any other circumstance or agent in the operation to cause sloughing and suppuration. We finally decided that, as the woman's system was saturated with bacteria, suppuration must have resulted in the amputation wound from this condition; further that as her system was already accustomed to the suppurative process, her temperature was unaffected by the infection of the new wound.

In the second operation I did not make new flaps, fearing a repetition of the sloughing, but contented myself with a simple incision and resection of the end of the bone. Primary union in the incision I made was quite as great a surprise to us as non-union was in the primary operation.

CASE VIII—CONICAL STUMP OF RIGHT ARM,

May J., female, aged 9 years, white, school girl. Six years ago when she was three years of age, her arm was crushed off by a falling tree. At that time I amputated the arm in the middle third of the humerus; primary union took place with a good rounded stump.

Oct. 1, 1895, her mother brought her back to me for treatment for conical stump. The bone had forced itself through the tissues covering the end of the stump to a distance of an inch and three-quarters, and it was covered with granulations, resembling very much the appearance of an ulcerating sarcoma. A piece of this bone was removed and examined microscopically.

She was admitted to the hospital October 23, but as she was suffering also with malaria, operation was deferred. Owing to her age and the probability of recurrence of the conical stump, it was decided in consultation that a shoulder-joint operation should be performed.

October 25 amputation was done through the shoulder-joint with Wyeth's pins to control the circulation. The anæsthetic was ether; antiseptic dressings and drainage tube were used. Not over half an ounce of blood was lost. The temperature when operation was performed was 98; that evening it rose to 101.2; on the second evening it was 103.6, with daily rise and fall for first week. By some misunderstanding the drainage tube was left in the wound for five days, and when it was removed pus flowed from the wound. Union by first intention in part of the wound and by granulation in the remainder. Discharged from the hospital Nov. 15, 1895, recovered.

This last case is interesting, as one of those occasional cases of growth of the bone after amputation in childhood, known as conical stump. The condition is not the fault of the operator, nor is it the result of inflammation, or retraction of the soft parts. The younger the child and the nearer the seat of the upper epiphysis of the humerus or the tibia and fibula, the greater the probability of its occurrence. The only other amputation in the humerus in childhood I have performed, was in a boy aged 9 years, caught under car wheels. Whether he has had the condition develop I cannot say, as he passed out of my hands immediately afterward, and I have not seen him in ten years. It has not occurred in several amputations in the leg which I have performed, and I do not think it is as prone to follow in this region as in the humerus.

The treatment recommended for the condition is reamputation through the continuity of the bone, but in this case, for the reasons given in the report, I decided on the shoulder-joint operation.

After the operation I dissected up the periosteum and found that it was inflamed; no doubt the inflammation had extended up from the inflamed granulating tissue covering the exposed bone beyond the stump. I felt satisfied on finding this condition, that the joint operation and not a lower one had been performed, for disease of the bone, no doubt, would have followed the latter amputation.

(Humerus preserved and exhibited.)

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SOME COMMON POINTS IN MINOR SURGERY."

Under the above caption Dr. Charles W. Hitchcock of Detroit has written a most timely paper, which he read before the Detroit Academy of Medicine some time since, and which is published in a recent number of the Physician and Surgeon.

This paper, from which we quote freely, gives us an excuse for saying some things which we have wanted to say for a long time. It begins as follows:

"I trust I shall not be thought too commonplace in my choice of a subject if I ask you, for a few moments, to descend from the heights and consider some of the common things of everyday life, to leave for a moment appendicitis, its varieties and necessities, the intricacies of problems gynecological and ophthalmological, while we talk plainly and familiarly about some common points of minor surgery, which observation has shown me are often insufficiently grasped, if not absolutely misunderstood, by general practitioners, to whom the majority of these cases go."

Verily, life and art are made up of small things and nothing should be deemed commonplace which will add to success in the relief of suffering and the prolongation of useful life.

In modern surgery he is most uniformly successful who is most careful and painstaking in regard to the little things, and as our author further says:

"In this day and age it goes without saying that, if best results are to be secured, we must apply to minor surgery precisely those principles which obtain in more extensive work. While of course no one is so blind to the present position of surgery as to wilfully or utterly ignore all antiseptic or aseptic precautions in his minor work, yet how easy it is to neglect important points, to handle an open wound or a crushed hand or foot with hands not made surgically clean, and how often do we see things, the asepsis of which could be well doubted, applied with the greatest carelessness to surfaces which should be kept as aseptic as possible. Asepsis and antisepsis are the keystone of the surgical arch of to-day, and he who doubts it or neglects all effort to carry out their principles, fails to do himself or patient justice, and fails to give the latter the benefit of that to which he is justly entitled."

If we are truly scientific in our practice we will strive as conscientiously for the attainment of every detail of asepsis in the dressing of a finger or the suturing of an eyelid as in the performance of a laparotomy or the removal of a brain tumor. If we do not do so we are equally disloyal to our patient and to surgery and untrue to ourselves. We are under the same moral and scientific obligation to secure a perfect result in one case as in the other, if we can.

Someone has said that aseptic surgery can be done wherever hot water and soap can be found, and it is true; and if one can get some carbonate of soda or borax he can do without the soap. Most men realize that it is better for instruments if they be sterilized by boiling in a 3 per cent solution of sodium carbonate rather than in steam, but few seem to know how very valuable the same solution(or a solution of borax of equal strength) is for cleansing wounds and the skin in their neighborhood. It may be made to take the place of ether and alcohol in the cleansing of the field of operation and the hands, and is harmless,

even if applied about the eye. Such a solution forms a most excellent bath for a greasy and begrimed crushed hand and "takes the fire out of a burn."

Some can most easily attain asepsis by the use of antiseptics and, indeed, there are some cases in which antiseptics are absolutely essential to success, and we have no quarrel with the surgeon who must have bichloride, nor with him who still clings to carbolic acid, but, as Dr. Hitchcock says:

"The broadest man is he who is not bound to one thing nor two, but is a man of many resources, who keeps ever in his mind's eye the one thing to be accomplished, realizes that this is possible through many agencies, and makes himself the slave of none. Many are the means by which a wound and its surroundings may be made surgically clean, aseptic, and many the methods by which it may be kept so."

It has been amply demonstrated that aseptic wounds heal best if made dry and kept so. We should therefore make no application to a wound which will destroy the superficial cells of the surface or promote oozing, if we desire primary union. Iodoform is certainly not a sine qua non and if any drying powder is needed we have boric acid, aristol, dermatol and many others which are less offensive and equally efficacious.

Relative to ointments our author speaks as follows and we fully endorse his conclusions:

"Have you ever watched the healing of a contused and lacerated wound of the finger under carbolized vaseline, and have you noted the sluggish healing, the mushy appearance of the tissues, the whitened and soggy condition of the skin? Surely there is nothing healthy about this and it is far from simulating any effort of nature to effect a prompt repair. Contrast it, if you please, with the action in a similar case, treated without other application than a bandage over antiseptic gauze, and you will wish to speed the day when such dressings shall no longer be seen. The philosophy of greasy applications to healthy tissues has never been apparent to me; their use is, I am sure (save in burns), unsurgical, and the passing of the ointment from (traumatic) surgery may be a fit theme for congratulation.

"In burns, for excluding air for the first few days, the ointments may find some excuse for their existence in this field. Even here they will best be early discarded and the separation of the slough be best hastened by a simple water dressing or one of normal saline solution, which dressing I have found to give the greatest comfort in these cases."

We all know that some wounds cannot be made aseptic and others will become infected in spite of all our care. In such cases the indication is obvious. We must dress frequently with a moist absorbent dressing, and cleanse the wound thoroughly at each dressing with an efficient but non-irritating germicide; possibly a 1-2000 solution of the bichloride of mercury is as yet the best we have.

Double Dislocation of the Sternal End of the Clavicle.

At a meeting of the New York Surgical Society, February 12, 1896, Dr. L. W. Hotchkiss presented a man, about twenty-eight years of age, who, on January 28 last, had sustained injuries by the wheels of a heavy truck passing over him. There was a wound of the forehead, a transverse fracture of the right humerus in its middle, a complete forward (presternal) dislocation of the left clavicle on the sternum, and a partial dislocation of the right clavicle upward and backward. The right dislocation had reduced itself, but that on the left side was not reducable by ordinary means, the fracture of the humerus interfering to a considerable degree with manipulation, and it still persisted. It did not particularly impair the functions of the arm, though the deformity was considerable. The case was presented to illustrate a rare dislocation and to show how little impairmen of function had resulted.

Dr. B. F. Curtis said he had never seen a double traumatic dislocation of the clavicle, but he had photographs of a case of double dislocation, apparently of congenital origin, in a girl of thirteen years. There was also some lateral curvature of the spine, and it was for that that she came under his care. The clavicles were not absolutely dislocated, but in certain positions of the arm the sternal end of each of them would slip out almost entirely on the anterior surface of the sternum. There was no pain, apparently no weakness, and the functional disturbance was so slight that nothing was done for the condition.—Annals of Surgery.

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Notes of Societies.

Report of the Proceedings of the Twenty-Second Annual Meeting of the American Neurological Association, Held at Philadelphia, June 3, 4 and 5, 1896.

By John Punton, M. D., Kansas City, Mo.

The twenty-second annual meeting of the American Neurological Association took place in the hall of the College of Physicians of Philadelphia, on June 3, 4 and 5.

The president, Dr. F. X. Dercum of Philadelphia, in the chair.

After the secretary, Dr. G. M. Hammond, called the roll, the president delivered a very instructive address entitled: "The Functions of the Neuron."

It dwelt at length upon the various views advanced by Nansen, and quoted several abstracts from this well-known author's work. Speaking of naked axis-cylinders, Dr. Dercum stated that they are in all likelihood a physiological impossibility in the cerebrum, for were they numerous, we could suppose nothing but a constant overflow of stimuli from one cell to another, and the consequent inco-ordination, not only of thought, but also of action. This is the view advanced by Nansen. The speaker stated that the question had arisen in his mind, as to whether the neuron was not an absolutely fixed morphological element, and whether it did not possess a certain, though perhaps limited, power of movement. Continuing, he said:" Realizing the practical value and the wide application of this idea, I have examined the literature to see whether a similar interpretation of nervous phenomena has occurred to others, and to gather such facts, if any, as could be brought forward in its support. I found that this thought had occurred independently to three observers, one in Germany and two in France.

"Ramon Cajal, however, opposes the theory of the mobility of the neuron and maintains, on the other hand, that the neuroglia cells possess a great deal of mobility. He points out, for instance, that the neuroglia cells of the cortex are at times stellate, and at others much elongated. He also maintains, that the processes of the neuroglia cells in reality represent an insulating or non-conducting material, and that during the period of relaxation they penetrate between the arborizations of the nerve cells, and their protoplasmic processes, and render difficult, or impossible, the passage of nerve currents. To me, however, it seems as though Ramon Cajal admits the very thing against which he contends.

"Turning our attention for the moment to the subject of hysteria, we will see what a flood of light may be cast upon this hitherto obscure and mysterious subject. Take the simple example of an hysterical paralysis and see how easily it may be explained. The neurons of a certain area of the cortex, for instance, retract the terminal branches of the neurons to such an extent that the latter are no longer in contact or sufficiently near to the neurons in the spinal cord, which supply the muscles of the paralyzed parts. When power is suddenly re-established in hysterically palsied limbs, it simply means that the terminal branches of the cortical neurons, previously retracted, are again extended, so as to re-establish the proper relations with the spinal neurons. It would be interesting, indeed, to follow out the ideas here brought forward in their application to the various phenomena presented by hysteria and other morbid neurotic conditions."

The address was well received, after which the regular programme was proceeded with. The first paper was read by Dr. James J. Putnam of Boston, on "Hemorrhagic Encephalitis," in which he maintained, that in spite of the serious nature of the disease, recoveries were not impossible; that it was frequently a sequel of la grippe and that the differential diagnosis between basilar encephatlitis and basilar meningitis was at times exceedingly difficult.

The next paper was a report of a case of Raynaud's Disease, with Autopsy, by Dr. William Osler of Baltimore. Among other things he stated that it was mostly complicated with hysteria, and that it rarely proved fatal; that out of seven cases which he had seen, the case reported was the only fatal one.

Dr. Walter Channing of Boston then read a paper on "Tumor of the Thalamus, with a Consideration of the Mental Symptoms." In tumors of this region of the brain, he said, mental disturbance always preceded the focal symptoms.

The case reported entered the hospital as

one of acute mania, which was the diagnosis of the attending physician, but the post-mortem revealed the presence of a tumor. The patient had pursued her usual occupation as school teacher until within five weeks of her death. The paper led to a general discussion on the diagnosis of cerebral tumors, in which several of the speakers concurred in the opinion that tumors of the thalamus gave no special symptoms, and that it was common for them to be mistaken for acute mania; indeed, mental symptoms predominate for some time in most forms of brain tumor in their incipient stage.

At this juncture Dr. Hobart Hare of Philadelphia presented a patient for diagnosis, a boy 16 years old, who, when 5 years old was struck with a baseball over the left eye. A few days later he developed a peculiar form of muscular twitching, confined largely to the face and shoulders, which closely resembled chorea, and which has increased in frequency and severity until the present time. Examination of the eyes was negative; knee jerks partially abolished, and a slight heart murmur.

Dr. L. C. Gray of New York declared at once that it was a clear case of spasmodic tic or palmus, its traumatic origin strongly suggesting this. He also advised having the patient put to bed with the use of hydrobromate of hyoscine to control the spasms.

Dr. Joseph Collins of New York said he disagreed with Dr. Gray in the treatment, but instead of having him put to bed he would advise the use of the bicycle as a therapeutic agent. (Laughter.)

Dr. Theodore Diller of Pittsburg said he believed it was a case of tic and advised hypnotism.

Dr. Graeme Hammond of New York said that four years ago he reported twelve cases, two of which were of traumatic origin, and he had had good results with the use of the Fld. Ext. conium in 20 drop doses, cautiously given.

Dr. Osler said he would like to know which kind of bicycle Dr. Collins advised? (Laughter.)

Dr. W. Sinkler of Philadelphia claimed that he had examined the boy and diagnosed the case as one of habit chorea. "The origin," said he, "is like other choreas and the heart lesion allies it to it also."

Dr. Patrick of Chicago said he thought it was a case of tic and belonged to mental diseases.

Dr. B. Sachs said: "I am glad it was so promptly diagnosed by my friends. I think this is not a habit chorea, but tic. We certainly owe much to Dr. Osler for the work he has done in the line of differentiation of these cases. I don't think putting to bed or the use of the bicycle will cure this patient. The prognosis at best is exceedingly unfavorable."

Dr. Collins: "I rise in all seriousness to say that I still believe the bicycle will cure this form of habit spasm."

Dr. L. C. Gray: "There is no resemblance between the muscular movements of chorea and those of tic. The former are much more extensive, involving whole groups of muscles, while the latter is confined to single ones. Then again, they do not respond to the treatment of rest and arsenic like the choreas."

Dr. Hare: "I showed this patient to Dr. Sinkler, Dr. Weir Mitchell, Dr. Dercum and several others. None of them thought it was tic, nor did I think it was a case of paramyoclonus, but the diagnosis to me is now as obscure as ever."

As the morning hour for adjournment had arrived the society was invited to luncheon by the Philadelphia Neurological Association.

AFTERNOON SESSION—JUNE 3.

The first paper was read by Dr. Burt G. Wilder of Ithaca, N. Y., on "A Nearly Constant Difference Between the Right and Left Paroccipital Fissures," which was illustrated by specimens and photographs. It was a very scientific discussion of a very technical subject, and exhibited a great deal of original work on the part of the essayist.

Dr. Joseph Collins of New York then read a paper, "Does Antisyphilitic Treatment Prevent the Occurrence of the Diseases of the Nervous System which are Considered Syphilitic in Origin?—A statistical study." He said: "Many neurologists believe that syphilis is incurable when it produces nervous disease, and I belong to that class. I am one of those who believe also that locomotor ataxia presupposes syphilis. In 100 cases of my own, 75 of them had a syphilitic history. Nor does the active and prolonged use of antisyphilitic treatment preclude the development of locomotor ataxia,

and my conclusion is that syphilis is practically an incurable disease."

Dr. Gray: "There are certain defects in the doctor's deductions, which I think we must not lose sight of. The details of his cases and treatment are not sufficient to base any such conclusions upon, and we all know how extremely difficult the diagnosis of syphilis is at times."

Dr. Sachs: "On the whole I think we can agree with the paper; but to take the cases that present early manifestation of syphilis, and see how much the treatment benefits them, leads me to have some faith in the treatment, as the very worst cases of syphilis are seen in those persons who have had no treatment whatever."

Dr. Knapp of Boston: "So far as I am concerned I shall not give up treating a case of syphilis, especially in the early stages, when I can benefit my patient as much as I have often done."

Dr. Osler: "My experience teaches me that early, thorough and systematic treatment makes a syphilitic a pretty good citizen."

Dr. Collins: "I have advanced no theories or new ideas, I have simply reported 100 cases and drawn some conclusions based upon them. If we are not permitted to do this, of what use are histories to us? If I had a patient come to me with tabes or paresis, I would not give mercury or iodides, as these, I am sure, do no good but often do harm. It is only in the exudative stage of syphilis that iodides are useful."

Dr. Henry Steadman of Boston then read a paper on "Notes on the Prognosis and Duration of Attacks of Mental Disease." "Owing to our lamentable knowledge of its pathology, we are more often tempted to generalize than to specialize. It is different with general paralysis, because we know its pathology and can easily predict its progress and termination. In spite of the popular belief that inheritance to insanity renders the prognosis unfavorable, I contend that the stronger the inheritance to mental disease, the easier the cure, but greater the tendency to relapse." He then summarized many of the causes which modify the prognosis, such as the time of life, at which it occurs, physical condition, form of insanity, previous mental capacity, etc. The amount of sleep and improvement of body weight are the surest signs of permanent convalescence. A quick onset means a quick recovery. In all cases there is left behind some slight change, such as a lowering of mental or moral tone, hence recovery is scarcely ever complete. In judging a case no clinical test is to be relied on.

Dr. W. Channing said: "There is an erroneous impression abroad concerning the incurability of insanity. As a matter of fact it is a much more curable disease than is commonly supposed. In the past 50 years the character of insanity in our country has completely changed. We have not to-day the violent forms which formerly existed, and we have fewer of the acquired forms."

Dr. Gray: "I fail to understand why we should place reliance on statistics on insanity as an entity. The prognosis in young, vigorous patients, suffering from melancholia, is not the same as old atheromatous cases. In fact, I have no faith in the asylum treatment, nor the statistics from them, hence we ought not to allow these figures to go forth to the world without our protest."

Dr. C. Eugene Riggs of St. Paul, Minn., read a paper entitled "Paraplegia arising from hemorrhage into the spinal cord, due to pernicious anæmia," which was illustrated by drawings. The society then adjourned.

By invitation of the Philadelphia Neurological Society the members were invited to take "high tea" at the Country Club, which was reached by a splendid drive through the best parts of the city. At 9 p. m. the society was entertained at a reception given by the members of the Philadelphia Medical Club, which was a very enjoyable affair, lasting until the "wee small hours."

THURSDAY, JUNE 4—MORNING SESSION.

The first paper was read by Dr. Theodore Diller of Pittsburg, on "Progressive Muscular Atrophy of Sudden Onset," which was well received; after which Dr. William Browning of Brooklyn read a paper on "Pitting about the hair cups, a trophic change in the skin in certain nervous disorders of central origin." The essayist claimed that in many nervous affections, especially organic, this peculiar change can be discovered, and exhibited photographs in support of his views.

The next paper was read by Dr. W. G. Spiller of Philadelphia, subject: "A Case of Sy-

ringomyelia, Unilateral in the Cervical Region, with Anthropathy of the Shoulder-joint and Ascending Degeneration." The reading of this paper elicited a spirited discussion on the ability to diagnose the presence of syringomyelia, the consensus of opinion being that the condition could be diagnosed during life, and that it was not so rare a disease as is generally supposed. Dr. Allen Starr said he had seen three cases since last October. The coincidence of its association with acromegaly was also recognized.

Dr. Burt Wilder of Ithaca, New York, then delivered some remarks on "The Dorsal Sack, the Aulic and the Diencephalic Flexure," which was very interesting and instructive, after which Dr. George Preston of Baltimore read a paper on "Brown-Sequard Paralysis," with report of a case, which elicited a merited discussion.

After the reading of this paper the society was invited to proceed to the University of Pennsylvania, where a lunch had been provided by Provost C. C. Harrison. After luncheon the afternoon session was called in the hall of the Houston Club.

AFTERNOON SESSION—THURSDAY.

The first paper was a report from Dr. Weir Mitchell of Philadelphia, on "The Effects of the Mescal Nut, a Species of the Cactus." The paper was read by Dr. Sinkler and embodied a series of experiments with the drug on Dr. Mitchell himself, which was very instructive.

This was followed by a paper by Dr. Whorton Sinkler on "Uncertainties of Cerebral Localization," with special reference to growths in silent regions, in which the doctor maintained that growths which give rise to the most serious trouble are those which occur in silent regions of the brain, such as the frontal lobe. This fact, however, should not militate against operation. In two cases of his own the symptoms pointed to a growth in the cortex, and Dr. Keen operated, but found no growth. He believes the time is not far distant when even these apparently silent regions will be fully understood and properly interpreted.

Dr. Charles K. Mills of Philadelphia then read a paper entitled: "A Case of Cerebral Abscess Situated at the Posterior Part of the External Capsule."

After which Dr. B. Sachs of New York read a paper on the "Surgical Treatment of Epilepsy. A critical review of the results in 19 cases." This paper and the one which followed, by Dr. Joseph Collins of New York, on "A Contribution to the Pathology of Epilepsy and a Resume of the Utility of Operations in Epilepsy," led to a more spirited and extended discussion than any other papers so far discussed.

Dr. Sachs claimed that out of his 19 cases three were cured by operation, two improved, three somewhat improved, the balance no improvement whatever. "If cases," said he, "were more carefully selected, cures would be more often effected. It is the lack of the analytical feature which renders statistics so useless. Return of the attacks a few days after operation does not mar the future success of the operation. No case can be pronounced cured, however, until attacks have ceased at least one year or even more. Alcoholic cases are, in my judgment, the hardest to cure. Excision of the cortex is to be reserved for the cases of short duration. Six cases were associated with cerebral palsy; while none of them were cured, they were all improved. In cases where the motor area is diseased and tissue removed, the resulting paralysis is only transient. The use of surgery, however, for suggestive purposes should be condemned."

Dr. Keen of Philadelphia and Dr. Gerster of New York, two of the ablest American surgeons, had been invited to discuss the surgical aspect of epilepsy.

Dr. Gerster: "That the methods in the past have been defective, all are agreed. The chisel has finally supplanted the old circular saw or trephine, more especially on account of its slowness. Flap operations have been devised, which are of great service, but V-shaped chisels, which have been in use, are undesirable. The greatest danger in every operation of this kind is hemorrhage, not arterial, but oozing, hence time is an all important factor. The instrument devised by Devilbis enables me to open the skull in a few minutes."

Dr. Keen: "I have listened to the papers with a great deal of interest, and I wish to say that I have never yet seen a case of epilepsy cured by operation. I am not willing to accept one, or even two years, for recurrence,

as this is too short a limit to base a cure upon. I have, however, seen great amelioration of epilepsy, hence I believe in operation for it. If I had epilepsy myself I would take the chance surgery offers. I would not be tempted, however, to operate in general idiopathic epilepsy, for when epilepsy has existed for four years, I should hesitate myself to operate. I believe it will take at least ten years more to settle this mooted question as to surgical efficacy in epilepsy. It takes 20 years' experience to settle such questions, and so far we have had but ten to base our conclusions upon. I believe in the flap method, and indorse all that Dr. Gerster has said with reference to quickness of operation."

Dr. Allen Starr: "When I published my book, I had 13 cases to report in which there was no cure. I have now 24 cases and in none of them has a cure been affected by operation. I have never been tempted to operate in idiopathic epilepsy, and never will be. It is my firm conviction that brain operations should not be done by general surgeons, but by special surgeons, men trained specially for the work. I have seen 12 cases of so-called abscess of the brain, eleven of which were operated upon, and none revealed the presence of abscess either at the operation or at the autopsy. Neither can I confirm McEwen's dictatorial statements in his reports of abscess. From the condition of the temperature or pulse you cannot tell much about abscess. The facts are that the data for abscess of the brain are at present very unsatisfactory. The day of the trephine is over and the flap operations are a great improvement. The last case Dr. McBirney operated for me by this method he was but fourteen and one-half minutes before he opened the skull and made a very large opening, using a thin, fine, narrow chisel. The indications for surgery in epilepsy, however, in my opinion, are extremely limited."

In closing Dr. Sachs insisted that much depended upon the selection of cases as to the efficacy of surgery, while Dr. Collins, with Dr. Starr, thought that only in a very limited degree could much be expected from surgery for the relief of epilepsy.

Among other papers read at the meeting were the following:

Dr. A. Booth of New York, on "Œdema of the Eyelids in Grave's Disease. Thyroidectomy." Presentation of patient.

Dr. P. C. Knapp of Boston, "The Nature of Neurasthenia."

Dr. Henry Upson, Cleveland, "Nerve Disturbances from Indigestion."

Dr. Henry R. Steadman of Boston, "Report of the Committee on the After Care of the Insane."

Dr. E. C. Spitzka of New York, "On a form of Mental Disease Intermediate Between Paretic Dementia and Primary Mental Deterioration," etc.

On the evening of June 4 the annual banquet took place at the Art Club rooms. There was a large attendance, and the affair proved very enjoyable, speeches being made by Drs. Hare, Riggs, Sachs, Gray, Hammond, Osler, Sinkler, Keen, Starr, Dercum, Collins and others.

The election of officers resulted in the choice of Dr. Allen Starr of New York, for president; Dr. Henry S. Upson of Cleveland, vice-president; Dr. Graeme M. Hammond of New York, secretary and treasurer; Drs. Dercum and Collins, councillors. There were three additional members elected to the limited membership of 100, viz.: Dr. John Punton of Kansas City, Mo., Dr. Alfred Wiener of New York, and Dr. F. K. Halleck of Cromwell, Connecticut. This brings the present membership to 93.

The vote for the place of the next meeting resulted in the unanimous choice of Washington, D. C.

The society then adjourned sine die.

The Mississippi Valley Medical Association.

A meeting of the executive committee of the Mississippi Valley Medical Association was held at Atlanta on May 6 and the following gentlemen were appointed to deliver addresses:

Dr. H. N. Moyer, Chicago, "Address on Medicine."

Dr. Horace H. Grant, Louisville, "Address on Surgery."

The indications are that the meeting to be held at St. Paul on October 20, 21, 22 and 23 will be the largest and most successful in the history of the association. As all the railroads will offer reduced rates for the round trip, an opportunity will be given to visit St. Paul and

Minnesota during the most delightful season of the year.

C. A. Wheaton, M. D., St. Paul, Minn.,
Chairman Committee of Arrangements.
H. O. Walker, M. D., Detroit, Mich.,
President.
H. W. Loeb, M. D., 3559 Olive Street,
St. Louis, Secretary.

Notes, News and Personals.

The Missouri Pacific Railway Hospital Department treated, during the year ending December 31, 1895, 29,109 patients; 439 were in-patients; 24,370 were out-patients.

In the St. Louis Division 21,037 patients were treated, and in the Kansas City Division 8,434.

The St. Louis Division supplied 56,226 prescriptions.

The Kansas City Division supplied 25,789, making a total of 82,015.

The Missouri Pacific Railway Hospital Department, during the first six months of 1896, has treated 1,654 in-patients and 6,907 out-patients and filled 22,342 prescriptions.

The St. Louis Hospital of the Missouri Pacific Railway Hospital Department was injured by the recent cyclone, which occurred at St. Louis May 27, to the extent of about $6,000. The rear wall of the administration building was demolished; the summer ward, and a portion of the stable were wrecked. The entire roof of the building was curled up and blown off. Fortunately, none of the occupants of the hospital were injured, but its staff was left in a somewhat uncertain and nervous state of mind. This staff is now rapidly becoming well acquainted with meteorology; the character of the clouds is now carefully noted, and every member of the staff appears to be informed about circus cum ulus stratus, nimbus and circo-stratus-cumulus stratus. Now it only needs a dark green, sickening looking cloud to suggest to them the pleasant confines of a cave or tunnel, or, as was said, a "deep underground tunnel." A man by the name of Smith said that, "clouds were those playful fancies of the mighty skies;" but, as one of the staff suggested, there are not a few Smiths in St. Louis who would say that, instead of clouds being fancies they were mighty facts of the mighty skies, and that he was morally sure that cyclones never played; they are too deeply in earnest.

Should any man argue that a physician understands his own art best and therefore, although he should prescribe poison to all his patients, he cannot be justly punished, but is answerable only to God?—Swift.

CLINICAL REPORTS.

St. Louis Hospital, Missouri Pacific Railway.

AN UNUSUAL ACCIDENT.

Case I.—I. K., a switchman on the Missouri Pacific railway, aged 51, while engaged in switching cars, inadvertently stepped upon the track while looking in a direction opposite to that from which an engine was coming, and was knocked down, the tender of the engine passing over him. The statement of the patient in his own words may be instructive and interesting. He said: "When I was struck I was thrown upon my back, and as quick as lightning I knew that I was a goner if the firebox of the engine should pass over me. I threw my legs up and put my feet against the firebox and was pushed backwards upon my back, as it seemed to me, a hundred feet. I felt my back crack and that it was being scraped all to pieces, still at no time did I lose my head, and no one ever wanted anything to stop moving any more than I did that engine."

The patient was brought into the hospital three-quarters of an hour after the accident, and upon examination did not present evidences of excessive shock. There was a partial dislocation of the eleventh dorsal vertebra; the separation between the spinous process of the eleventh and twelfth dorsal vertebræ was nearly an inch in extent; motion and sensation were normal in both extremities, although there was retention of urine, probably due to shock, as he was able to pass the urine readily six hours afterward. His back was contused and more or less lacerated from shoulders to buttocks, caused by being scraped over ties and cinders. He had also had several scalp wounds. The patient was put upon a water bed and improved rapidly; upon the fourteenth day a plaster-of-paris jacket was applied. This jacket was kept on the patient for nearly four months, experience in these cases indicating that a too early removal may be deleterious. He was not permitted to resume labor until nearly six months after the accident. He has since returned to lighter labor, as in almost all of these cases a more or less degree of rigidity of the vertebral column remains as an heritage to this form of

injury. There are few if any of these cases where we have a perfect return to normal action and elasticity. After the plaster jacket had been removed massage and systematic exercise were ordered.

SYNCHRONOUS AMPUTATION OF BOTH LEGS.

Case II.—I. M., a section hand on the Missouri Pacific railway, aged 54, was knocked down by an engine and run over, sustaining loss of both legs. The right leg was crushed at the junction of the upper and middle thirds, the left was crushed near the junction of the lower and middle thirds. He was brought to the hospital within half an hour after accident. Upon examination he was found to be suffering from excessive shock, the pulse was rapid and very weak, but the mind was clear and he answered questions intelligently. Owing to the age of the patient the case was considered as doubtful. One-twenty-fifth of a grain of strychnia was given hypodermically every half hour, and a little over a quart of the normal saline solution was injected into his right flank. The pulse responded to these remedies, and after an hour and a half, amputation was performed. Dr. Outten and Dr. Vasterling synchronously performing the amputations, Dr. Outten on the right leg, Dr. Vasterling on the left. Shock was in no way excessive after the amputations, but the injections of strychnia were kept up at intervals of two hours for some eight or ten hours. This case progressed to recovery, with excellent stumps.

SYNCHRONOUS AMPUTATION OF BOTH LEGS.

Case III.—M, M., a section hand on the Missouri Pacific railway, aged 22, while engaged in dumping dirt, fell between cars and was run over. Being injured 54 miles out upon road, he was not received in the hospital until nearly six hours after the accident. Upon examination the right leg was found crushed at the junction of the upper and middle thirds; the left leg was crushed at the junction of the middle and lower thirds. In the infliction of the injury a contused and lacerated wound was made, which extended upon the outer aspect of the limb, four inches above the knee. The skin was separated from tissues beneath, almost up to the knee, and stretched to such an extent as to leave a doubtful skin flap. The muscles were pulpified upon the side of the limb. The patient was still suffering from shock, and saline solutions were injected and strychnia given. Amputation was performed eight hours after the infliction of the injury, Dr. Vasterling amputating the right leg, Dr. Outten the left. After amputation the patient evinced greater shock and strychnia was administered every two hours. Eighteen hours after amputation reaction appeared to be complete. The case progressed steadily, but upon the outer aspect of the left leg a granulating wound was left some 18 or 20 square inches in extent, which showed no tendency to heal. The dressings were changed, aseptic gauze being steeped in a six-tenths normal saline solution. Under this treatment the wound seemed to improve, but desiring to hasten the healing process, the root sheaths of hair were used as grafts, and certainly aided in the healing process. It was found, however, that in the use of the normal saline solutions, when persisted in too long, the granulations become pale and anæmic, and the epidermic edges of the wound presented a condition of more or less inversion. It will be found that upon the addition of a dram of sugar to a pint of the normal saline solution, that there will be an improvement in the appearance of the granulations inside of twenty-four hours. By changing thus from the saline solution to a saccharated saline solution, these dressings certainly act as well, and, to our conception, infinitely better, than any antiseptic agents we have ever used. If a seeming sluggishness in the healing process occurs under the use of the normal saline solutions, the free bathing of the granulations with hot aseptic solutions of salt and sugar certainly show the good effects. There were about twenty root sheath grafts applied, many of which took excellently well, and the wound has healed perfectly. Considering the great loss of skin, it is certainly a splendid showing.

There have been five double amputations synchronously performed in this hospital. One was where both arms were amputated simultaneously; the rest were where both legs were crushed; none of them, however, was above the knee, and to this fact we attribute the recovery of all of the cases. It is certainly the best of common sense to minimize the length of time that a shocked patient is under chloroform, hence in these cases where two operators are

employed at the same time, we shorten the operative time and diminish the amount of chloroform administered. If such cases will get well at all they certainly have a better chance with synchronous amputations. We would consider from our experience in these cases, that the performance of a double amputation by a single operator is a reprehensible proceeding, as it enhances the danger and is liable to be fatal. The points in favor of two operators are the celerity of the procedure and the relatively short time that the anæsthesia is used. These are always two vital points, where shock has been manifested.

COMPOUND COMMINUTED FRACTURE OF LEG.

Case IV.—I. T., a laborer, aged 22, an employe of the St. L. I. M. & S. Railway, was riding on the pilot of an engine with his leg hanging over the side of the pilot. His left leg collided with a heavy truck on a platform, producing a compound comminuted fracture. The parts were dressed by a local surgeon, and a piece of the tibia removed nearly three inches in length. The patient was then brought to the hospital. Upon examination we found the fibula comminuted, but the circulation was well established, and it was determined that an attempt should be made to bring the fractured ends in apposition. The inferior fragment of the tibia being bevelled, this portion of the bone was sawed off, while the superior fragment being rather blunt, it was determined to engage the upper fragment in the medullary cavity of the lower. The superior fragment of the fractured tibia was therefore chiseled upon both sides, making it somewhat pointed. The comminuted pieces of the broken fibula were removed, thus rendering it possible to bring the fragments of the tibia in apposition. A hole was then bored in the lower fragment of the tibia, and a similar one in the upper; notches were made in the bone, half an inch above and below these holes, respectively. Large cable silk, rendered aseptic, was then introduced through the holes and the superior fragment of the tibia with its sharpened point was engaged in the medullary cavity of the inferior portion. The silk cable was tightened and engaged in the notches above and below the holes through which it passed; the consequence was that a comparatively firm apposition of the fractured ends of the tibia was obtained. Campho-phenique had been used in cleansing the parts. They were then washed with the hot normal saline solution and covered with gauze steeped in saline solution, and a cinnamon bandage applied outside, after which the limb was put in a wire basket splint. Union is slowly taking place. Under this simple dressing there has been but little suppuration, less than we have ever seen from so extensive an injury.

AMPUTATION OF LEG IN THE MIDDLE THIRD.

Case V.—A. B., a brakeman on the St. L. I. M. & S. Railway, aged 53, while attempting to get on a car, slipped and fell, his right leg passing under the cars, crushing his leg nearly to the junction of the lower and middle thirds. B. is an unusually large and fleshy person, and the difficulty encountered in this case was the saving of as much of the limb as possible; but owing to the unusual circumference of the calf of the leg it was difficult to determine the true condition of the skin. A modified Stephen Smith flap was made. The skin around and above the point selected for amputation was thoroughly scrubbed with hot water and soap and a corrosive sublimate solution (1 in 1,000.) After amputation the normal saline solution was used and aseptic gauze steeped in hot normal saline solution applied to the parts to the amount of three layers, then a gelatinous cinnamon gauze bandage applied. Above this, another layer of salted gauze, and above this the cinnamon gauze completed the dressing. A posterior wire splint was adjusted to carry out still further the treatment of rest. This case is mentioned mainly to show the fact that treatment under salted and cinnamon gauze resulted in healing by first intention. All wounds in the St. Louis hospital are now being treated by the saline solution, and the cinnamon impregnated gauze bandage. Since we have employed this treatment, we have obtained better and more satisfactory results than we did when we used the usual antiseptic dressings. There is absolutely no odor about the dressings and there is comfort in the application, not only to the patient, but to the surgeon as well. Iodoform, corrosive sublimate and carbolic acid are never used in dressing wounds now; nothing but saline solutions, gauze and cinnamon bandages. Hence there is never any dread of either local or sys-

temic effects. Under the use of antiseptic agents, applied continuously for some time, complications were not of infrequent occurrence, but after nearly six months use of simple dressings, we are free to confess that the treatment in every way excels the use of antiseptics. Again, when we have a slowly healing granulating surface, the use of the normal saline solution makes the application of skin grafts very simple, and we believe that it will be only a matter of time when almost all granulating surfaces will be treated by the application of root sheath hair grafts, for in this way we can obtain a more rapid healing of a granulating surface than can possibly be obtained in any other way.

AN UNUSUAL ACCIDENT.

Case VI.—M. S., a brakeman on the Col. St. L. I. M. & S. Railway, while attempting to remove a coupling pin from a moving car fell astride of the rail and in this position was pushed some eight feet by the wheel; the flange of the wheel crushed off the lower portion of the scrotum, fortunately not involving the testicles. The penis was somewhat contused and lacerated and the thigh was contused and lacerated in its middle third, but no bones were broken. The negro's prayer and argument were as unique as his injury, as he said: "Doctah, for the Lawd's sake don't cut off dat dar," pointing to the penis; "if you cut off my leg why den I can get a cork leg, but if you cut dat off, al de king's horses and all de king's men can't put it back again. Save it for my sake; save it for de Lawd's sake." It is needless to add that both were saved, but extensive sloughs occurred upon inner aspect of the thigh and upon the penis and scrotum. While both were somewhat severely injured, yet under treatment they are doing well.

GENERAL CONCUSSION.

Case VII.—I. Mc., a brakeman, aged 22, in the employ of the St. L. I. M. & S. Railway, was brought into the hospital five hours after an accident. He was contused upon his face, hands, legs and body. While his physical injuries were painful and rather extensive, his mental state presented anomalous features, which were the interesting part of the case. The cause of his mental excitement will be better understood when the circumstances of the injuries are related. It was a dark, rainy night and I. Mc. was the rear brakeman upon a freight train of some forty cars. The train broke in twain just as they were descending a short hill, and, realizing that a fast passenger train, which was following, could not be very far off, I. Mc. snatched a lantern and, without thought of consequence, jumped off of the rapidly moving train. He was dashed to the earth, thoroughly bruised and stunned, his lamp being broken to pieces, and in the dark he started and ran with all his might in the direction of the coming passenger train. It finally dawned upon him that he had nothing to signal with, but remembering he had some matches and a pocket handkerchief, he after some difficulty managed to set fire to the latter, and was enabled to successfully stop the passenger train, thus preventing a serious collision. When brought to the hospital he was almost in an hysterical condition, and in spite of his painful injuries he could and would not remain in bed. He would talk, in a loud, explosive manner, and in the relation of his accident his eyes would glare and he would gesticulate vehemently, and when left alone would keep up constant conversation with imaginary persons. There were no indications of cerebral injuries. It was plainly a case of hysterical excitement incidental to the intense mental strain he had undergone. He was put upon bromide of potash, 30 grains every second hour, with 15 grains of trional administered alternately. Improvement was rapid, and at the end of ten days he was in a normal condition.

SNAKE BITE—PECULIAR TREATMENT.

Case VIII.—A. K., a section hand, aged 23, in the employ of the St. L. I. M. & S. Railway, while attempting to remove some railway ties from a swamp, was bitten twice upon the back of his right hand by a water moccasin (toxicophis pisicivorus). Realizing what had happened, he killed the snake, then washed his hand and sucked the part and then put a tight ligature around his wrist. He was then promptly inebriated with whisky, and with this a chicken poultice was applied to the bitten hand. The chicken poultice used was prepared in the following manner: A live chicken was caught and split open from breast to back, while living, and the bitten hand stuck in among the warm viscera. We learned that no less than ten chickens were

thus applied. As fast as one would die a new one was used. The patient placed more reliance upon the efficacy of the chicken poultices than he did upon the other remedies used. Upon examination of the hand twenty-four hours after the bite there was considerable redness and œdema, and four punctured wounds were plainly visible upon the back of the hand. The patient was under treatment some fifteen days. Only carbolized poultices were used and the hand put upon a splint.

OBITUARY.

J. F. Edgar, M. D.

Dr. Edgar was born July 1, 1863, at Newton, Ia. After graduating in the public schools of that place at the age of eighteen, he took a two years' course in medicine at St. Joseph, Mo., and subsequently one year at Des Moines, Ia., graduating there in March, 1885.

He then located in Edgar, Ia., and commenced the practice of his chosen profession.

He was a stranger in a strange land, but having full confidence in his own knowledge and ability, he began the struggle for success as a physician with a courage and determination which could but inspire admiration. The doctor belonged to several secret societies, in all of which he took an active part; he also belonged to the Nebraska Eclectic Medical Society, and was a member of the National Association of Railway Surgeons, and local surgeon to the Grand Island Railroad at Edgar. He was married to Miss Frances Hart, May 16, 1886, and there were born to them Grace, now aged 7, and Vera, aged 3, all of whom survive him.

The news of his death, which occurred on the morning of August 22, 1895, while out on a professional trip in the country, was very sudden and was a terrible blow to his family and friends, and the general feeling was that what would have been a bright light in the medical profession had been blotted out.

Lord Byron somewhere says: "Strength of endurance is better than all talent." To which an unknown wit responded: "If this axiom be true, how superior an animal is the ass." Granted that the ass is superior; but it is an established fact that the ass was invented a long time before the bicycle. But the "Biker" could dally and endure all around a solitary ass. If he humped his back at the right angle he could wear out a drove of long-eared talent.

Extracts and Abstracts.

Alcohol as a Disinfectant for the Hands.

The advantage of using alcohol in the disinfection of the hands has been prominently emphasized during the last year. Ahlfeld and Vahle publish an interesting article in the Deutsche Medicinische Wochenschrift of February 6, 1896, supporting alcohol as a disinfecting agent.

Fürbringer supposes that the alcohol frees the hands of fat and allows the subsequently applied disinfectant to exercise a more powerful action upon the micro-organisms of the skin.

Reinicke also ascribes to alcohol the property of taking up fatty substances from the skin; but since he demonstrated that the alcohol has in itself a subsequent disinfectant action upon the hands, he explains that the water is able to wash off the fat which, mixed with bacteria, had been dissolved by the action of the alcohol.

Körnig believes that the alcohol-action is a deceptive one; that the alcohol does not kill bacteria, but that its astringent property so alters the skin that the bacteria are retained in the shrunken epidermis and cannot therefore grow upon nutrient gelatin.

Opposed to these three modes of explanation, Ahlfeld and Vahle emphasize the statement that alcohol has really a bactericidal property which, however, is able to exercise its action only under certain circumstances—namely, when the micro-organisms themselves contain water.

Before these two authors proceeded to make an experimental effort to establish their own theory of the action of alcohol, they commenced by experimental methods to confute the first-mentioned theories. They found that ether, which removes fat from the hands more readily than does alcohol, did not give the same sterilizing effect, so that of thirty-six pupils who had endeavored to sterilize a finger in this manner, only eight succeeded in producing a sterile digit—that is, 22.22 per cent; while of those who used alcohol, according to the usual method, instead of ether, 88.88 per cent succeeded in obtaining a clean finger.

The third theory is contradicted by the fact that after the use of the alcohol the hand was placed for at least five minutes in hot sterilized water, and in spite of this soaking and softening the sterilizing action of the alcohol was not removed.

Having confuted the other theories, Ahlfeld and Vahle explain the different action of the alcohol upon moist and dry micro-organisms. They dipped dry staphylococcus silk threads into alcohol, and supposed that the subsequent

cultures obtained by the planting of the silk into nutrient media were due to the formation of a stiff layer upon the outer surface of the bacterial mass, so that the cocci upon the interior of this mass remained at a distance from the action of the alcohol and were therefore not destroyed.

The practical outcome of the whole matter is, that alcohol must be regarded as a strongly sterilizing material in cleansing the hands when we have to deal with the ordinary bacteria of the operating room. It should be applied thoroughly with a stiff brush for several minutes after washing with soap. A bichloride or carbolic-acid solution should then be used, as usual.—Medicine.

A Case of Traumatic Ophthalmoplegia.

Dr. David Webster of New York reports the following rather unique case in the Medical News of February 29, 1896:

On the 17th of November, 1895, Edward F. McC., aged 6, while walking with a slate-pencil in his hand, stumbled and fell on a board sidewalk. He was picked up in a semi-unconscious state and taken home. Dr. Edward L. Bull was called to see him soon after the accident, and found ptosis, with total ophthalmoplegia of the right eye. There was a punctured wound beneath the right orbital edge, at about the junction of its middle and inner thirds. Besides this wound of the upper part of the eyelid, which was still bleeding, there was a slight bruise or mark on the brow, as though it had struck upon the pencil lengthwise. Dr. Bull examined the parts carefully, but could find no foreign body. On testing the vision of that eye the boy counted fingers and recognized a watch, but it is now doubtful if he saw the fingers with the injured eye, and the loss of sight may have been immediate. It is certain he had no perception of light in the eye a few days later. He looked pale and felt sick, and vomited from time to time for forty-eight hours after the accident. He then recovered his usual health and went about his play as usual, and has been well, so far as his general health is concerned, ever since. Dr. Bull sent him to me a few days after the accident. I found total blindness of the right eye, with absolute ophthalmoplegia and ptosis. The third, fourth, sixth and optic nerves were totally paralyzed. Ophthalmoscopic examination showed nothing abnormal in the media or in the fundus. It was thought there was slight exophtalmus at first, but I was not sure there was any when I saw him. He has had no pain in or about the eye at any time since the injury and there have been no indications for treatment.

When I saw him on January 8, 1896, there had developed a slight paleness of the right optic disk. He had also recovered the power to raise his right upper lid a very little; otherwise, the status remained unchanged. There is now not only well-marked atrophy of the optic disk, but a neuro-paralytic keratitis has developed itself. The eyeball is slightly red and the cornea is hazy and anæsthetic.

The problem in this case is as to the nature of the injury. It seems to me most probable that the slate-pencil entered the orbit, injured the lenticular ganglion and fractured the walls of the orbit at or near its apex. The pencil may still be partly in the orbit and partly in the cranial cavity. I presume the same symptoms could have been brought about by fracture of the orbital walls from the force of the blow of the brow upon the board sidewalk, and possibly even by shock or concussion; but the punctured wound seems to indicate that a portion of the slate-pencil is embedded somewhere in the orbital tissues so deeply as not to be felt with the finger.

The nature of their profession exercises so great an influence on that longevity that only twenty-four out of every hundred attain their seventieth year; so that those who study the art of prolonging the lives of others, are most liable to die early, probably on account of the physical evils to which they are constantly exposed.—Davies.

That city is in a bad case whose physician has the gout.—Hebrew.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate: situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms: stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address "BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

The Railway Surgeon

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THE SYMPTOMS, THE DIAGNOSIS AND THE INDICATIONS FOR TREATMENT OF ACUTE INTRA-ABDOMINAL INJURIES WITHOUT EXTERNAL EVIDENCE OF VIOLENCE.*

BY JOHN B. DEAVER, M. D., PHILADELPHIA.

Mr. President and Gentlemen, Members of the National Association of Railway Surgeons:—The honor conferred by your distinguished president, Dr. Murphy, in selecting me to deliver the address on surgery before this association is highly appreciated. I fear, however, that I am not able to do full justice to the occasion. The railroads of the United States have assumed such magnificent proportions that to-day they far surpass those of any other land, both as to business and equipment. They represent more capital and employ more men than any other class of industries in this very progressive land of ours, and we, as Americans, must feel a just pride in the accomplishment of such success. Your organization, therefore, represents the medical side of America's greatest industry, and you may be proud of the influence and opportunities for good which are afforded you. The success of your organization, like that of the railroads with which you are associated, is largely due to the completeness and the practical workings of your system.

Our profession is peculiar in its relation to mankind. In olden times the doctor was the priest, and to-day we have not finished our duty to a patient when we have administered the proper remedies for the ailment for which we have been consulted. We must constantly strive to discover other methods to overcome the effects of disease. We give our time, our

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

labor and make personal sacrifices not for financial returns alone, but because we have a high ideal of duty for which we are glad to make our sacrifices and accept as a reward the knowledge that our work has been well done and that man's life on earth has been made easier, his sufferings less because we have lived. What higher ideal can a man have than the sacrifice of self to the good of others. The happiest man is not he who goes to bed at night and says, I have made so many dollars to-day, but it is he who can say, some one is better off and happier to-day because I live. And this, gentlemen, is the glorious opportunity which presents itself to us, and is the reason our noble profession stands in a peculiar position to the rest of mankind.

The rush of progress is so great and the practical side of human character is so largely developed in these the closing years of the nineteenth century that I thought it wise to address you upon a technical subject. In selecting the subject, I have endeavored to present one which is embraced in your line of work, viz., a review of the symptoms, diagnosis and indications for treatment of acute intra-abdominal injuries without external evidence of violence.

The general and the railroad surgeon have many interests in common. Railroad surgery being embraced in general surgery, it is impossible to draw lines of distinction. This is a fitting opportunity for me to raise my voice in protest against specialism in surgery. I have always maintained that the general surgeon whose opportunities have enabled him to deal with the various intra-abdominal affections, be they the result of disease or traumatism, occurring in the male or the female, is the more capable from his training than is the specialist, strictly speaking.

The diagnosis and the indications for treatment in the majority of cases of railroad injuries are comparatively simple, and seldom occasion much doubt as to the proper course to be pursued. The cases of severe railroad injury, which constitute an exception to this statement, are those in which there are both profound shock and extensive laceration of the soft tissues with free hemorrhage. I do not agree with those whose practice it is to amputate under these circumstances, with the belief that the presence of the mangled member is a factor in prolonging the shock, and that, therefore, it is necessary to remove it before reaction can be established. I do not believe it to be good surgery to amputate at this time. Amputation during shock will never establish reaction, and bleeding can always be controlled by ligature, an Esmarch tube, or by a tourniquet. In intra-abdominal lesions I would only operate during shock where I believed free bleeding was going on. Opening the abdominal cavity for the purpose of controlling bleeding in the presence of shock, cannot be compared, from the degree of severity, with the removal of a limb during severe shock in the absence of uncontrollable hemorrhage. I emphasize this point, as I am sure it is a very important one. I consider that it is in the class of cases to which I am now referring that mature judgment is called for, and this is especially true of those accidents embraced in the title of this address, as there is no type of injury which calls for a more prompt diagnosis as to the probable result of the traumatic forces brought to bear and where immediate operative treatment is so urgently demanded.

The free bleeding which occurs when an abdominal viscus or vessel is torn or ruptured is a sufficient indication for radical measures, and when we realize that peritonitis follows invariably and will probably be purulent in a few hours, we cannot hesitate to state that early section is the proper measure to pursue. Contusions of the solar plexus and splanchnic nerves will give rise to symptoms which may be misleading, but which should not long puzzle the experienced diagnostician.

The arrangement of the bony and muscular anatomy of the abdomen peculiarly protects its contained viscera from the effects of trauma, but it is easy to comprehend how a slight accident may produce grave injury to its contents, when we consider the nature and the importance of the organs, their large vascular supply, their superficial location, and the likelihood of fatal hemorrhage and shock following an injury to any of them. The forces which cause these injuries are percussive, concussive and crushing. The injuries produced by percussive force are rupture of the solid viscera, and of the hollow viscera when filled with solid, semisolid, or fluid matter. Concussive force causes rupture of the mesentery

or mesocolon or of the blood-vessels, and sudden violent displacement of the partially movable viscera. Crushing force may cause any of the above-mentioned conditions, and by direct compression cause pulpification of the solid viscera, or partial destruction of the walls of the hollow viscera, which sometimes results in pressure necrosis, and subsequent fecal or urinary fistula.

Every surgeon present has undoubtedly at some time in his experience, either in private or railroad practice, met with cases in the class covered by the title of this paper. These are cases in which the history and the general condition of the patient give the impression that there is a serious lesion within the abdomen, and yet upon examination we find total absence or only slight evidence of external injury. The tendency, I fear, with many is to treat these patients tentatively, only to be awakened at the autopsy to the fact that a rupture or a tear existed in the abdominal cavity, which by early radical operation might have been relieved. The mortality in these cases is appalling; reference to the literature of the subject will amply bear out this statement. The immediate effects of an injury, severe enough to cause a serious lesion of an abdominal viscus, are sometimes so slight, however, as to be misleading. Very often a patient will walk to a conveyance or to a hospital, complaining only of slight pain. In varying periods of time following the injury more decided symptoms develop, namely, signs of hemorrhage, if the solid organs be involved, early peritonitis if the hollow viscera be ruptured or torn sufficiently to allow their contents to escape.

In discussing the lesions of the abdominal viscera, I will speak of them in the order of their frequency. As it is impossible to group the symptoms so as to designate the particular organ or organs injured, the symptoms indicative of injury of each will be detailed. In cases of severe intra-abdominal injury there are a few symptoms which are common to all, and in the majority of instances warrant immediate operative interference. The most prominent of these is pain which is accompanied by shock, the degree of the latter depending upon the extent of the injury, the amount of blood lost and the temperament of the individual. Temperament and nationality have a strong bearing in the production of shock. Persons of a highly nervous temperament suffer more from shock than do phlegmatic individuals. For example, Americans are far more liable to suffer a severe degree of shock following injuries or operations than are Germans. The pain in these injuries is peculiar and difficult to describe, but is readily recognized by one who has seen many of these cases, and by the patient himself. It is not like that of the ordinary intra-abdominal affections, but is described by the patient as if something had given way or ruptured, and is usually accompanied by a consciousness of impending death. There is present, also, tenderness, which will be more or less localized unless the ensuing peritonitis be general. In the early stages of the injury, when the shock is most profound, the pain may not be so pronounced, and if large doses of opium are administered it may be masked throughout the entire course of the trouble. When vomiting is associated with intense and agonizing pain, and when tympanites is also present, the indications clearly point to either intestinal or vesical rupture. On the other hand, if there is collapse with evidences of rapid exsanguination, this would point to hemorrhage from rupture of one of the larger vessels or from rupture of the liver or spleen. The vomited matter rarely contains blood unless the injury be one of the stomach or the duodenum, yet, if the injury to either of these organs be such as to establish a communication with the peritoneal cavity, vomiting may be absent, or, if present, may show no evidence of blood.

There is often seen a characteristic rigidity of the abdominal walls, which is due to intra-abdominal irritation. I have seen it so pronounced as to call to mind the checker-board appearance of the normal abdominal wall as represented in sketches by artists of former times. This characteristic rigidity will, of itself, in my judgment, warrant, in the bulk of instances, opening of the abdominal cavity. This condition of the belly walls, in my experience, has been invariably associated with some form of serious intra-abdominal lesion. Associated with the peculiar rigidity is the severe abdominal pain, increased by the slightest movement or pressure. The rigidity under the foregoing conditions is quite as characteristic of a severe lesion as is rigidity of the lower right quadrant of the abdominal

walls in acute appendicitis when associated with the two remaining cardinal symptoms of this affection, namely, pain and tenderness.

Restlessness, consequent upon traumatism, while always indicative of a severe type of injury, is especially well marked in the class of injuries under discussion.

In dealing with injuries of the abdomen in the female, pregnancy, extra-uterine pregnancy, ovarian tumors, pyosalpinx, etc., must be borne in mind.

Rupture of any of the solid viscera of the abdomen is usually followed by fatal hemorrhage.

The abdominal organ most commonly injured is the liver. This can be readily understood when one recalls the size of the organ, its location and its friable nature. Further, from its great blood supply it also can be understood why a rent of any size involving this organ will be immediately followed by serious bleeding. In connection with rupture of the liver the gall-bladder is also liable to be torn from the relation it holds to the liver.

The symptoms of rupture of the liver are usually great lividity of the skin, marked embarrassment of respiration, distention of the abdomen which is not altogether tympanitic, itchiness of the skin, and, if the patient survives the immediate effects of the injury, jaundice.

Rupture of the gall-bladder or biliary ducts may occur as the result of blows upon the abdomen, especially if the gall-bladder be filled with gall-stones. The commonest seat of rupture of the biliary organs is the cystic duct.

Peritonitis follows rupture of the gall-bladder or ducts. If the tear be small and the leakage slow, the escaping bile may become encysted and the peritonitis remain localized. If rapid, there will be general peritonitis and death. If there be no rapid extravasation, there will be collapse, vomiting and dyspnea and abdominal pain. If the bile escapes into the general peritoneal cavity, there will be prompt general acute peritonitis, with intense jaundice and clay-colored stools. When the gall-bladder has been ruptured death almost invariably follows.

Mr. Battle[1] reports a case of rupture of the bile duct in a boy 6 years of age, who was run over by a cab, in which there was but slight shock without much pain or tenderness. Vomiting began early and persisted. On the fifth day slight jaundice developed. He was operated upon on the eighth day, and the abdominal cavity was found filled with bile. He died on the morning of the ninth day.

Autopsy.—Liver and gall-bladder were intact, but about half an inch beyond the junction of the cystic and hepatic ducts the common duct was found to be torn completely through. No other injury was found.

The treatment of laceration of the liver and of the gall-bladder, the hepatic, the cystic or the common duct resolves itself into prompt surgical interference. The custom among surgeons to treat such injuries by operation after all other means have failed has been universally followed by a fatal result; therefore, if the injury to the viscus is of such a character as to partially or completely destroy its functional activity and the resulting hemorrhage almost sure to cause a fatal issue, it would be far better, even under such circumstances, to give the patient the benefit of a section and possible treatment by operation.

If a tear of the liver be superficial, by early operative interference we are enabled to remove the blood and bile which have escaped into the peritoneal cavity, to surround the rent with strips of gauze with a twofold object: 1. To prevent a second invasion of the peritoneal cavity by blood or bile. 2. To invite adhesions between the liver and parietal peritoneum.

The hemorrhage can be controlled by searing the torn surfaces with the actual or thermal cautery or packing with gauze strips.

When the tear in the liver is of such a character as to permit of suture, the latter, which should include the capsule, should be used. If there is doubt as to the thorough control of the hemorrhage by the sutures, the wound should be treated by the open method, gauze strips being placed between the liver and the parietal peritoneum to the outer side of the line of suture.

When the gall-bladder, the hepatic, cystic or common duct has been torn alone or in connection with injury to the liver, it may be necessary to establish a biliary fistula; however, the attempt, if possible, to suture the bladder or duct should be made.

Rupture of the spleen is less common than

[1] Lancet, London, 1894.

of the liver, and is usually found in conjunction with injury to other abdominal viscera. The cause of death in the majority of instances is hemorrhage, though it is not apt to occur so soon as in rupture of the liver. This fact is accounted for by the elasticity of the capsule of the spleen and its trabeculæ. Injury to the splenic artery or vein is invariably followed by sudden death. When there has been considerable bleeding and the patient survives, abscess is the result. The spleen may be displaced or even reversed from its normal position by trauma. The symptoms of ruptured spleen are those of exsanguination, precordial pain, gasping and shortness of breath (air hunger), weak, rapid pulse, vomiting and thirst. Slight lacerations of the spleen may be followed by left subdiaphragmatic abscess, when the question of diagnosis between this condition and that of left-sided empyema, particularly if encysted, would arise.

When the spleen has been the seat of the injury under consideration, its removal should follow.

The preferable incision for the removal of the spleen is a longitudinal one through the left semilunar line, commencing at the border of the ribs.

The injuries which result to the kidney from traumatism, to the abdominal wall, or to the loin, are contusion, rupture and laceration.

Rupture of the kidney is not an infrequent sequel of injury to the loin, although anatomically this organ is well protected. Death does not always follow such an accident. The two most important factors in the recovery are the plugging of the renal blood vessels, which controls the hemorrhage, and the compensatory work of the other kidney. If, however, the renal vessels or a large branch be torn, death will promptly follow from hemorrhage. If the peritoneum be involved in the injury, a fatal peritonitis is almost invariable. When the patient survives the immediate effects of the accident, abscesses are apt to form, and, by secondarily involving the peritoneum by sloughing, cause a fatal issue.

Rupture of the kidney varies in intensity and location. There may be one or more small surface tears, or the organ may be torn completely through, either transversely or longitudinally.

Laceration of the pelvis or ureter is not immediately fatal, as it is not accompanied by extensive hemorrhage. The inflammation following obliterates the duct, consequently there will be developed in a few days a hydronephrosis, with a corresponding tumor of the loin. In some cases the kidney will become a multilocular abscess after long periods of time when the impervious ureter atrophies.

Simple contusion of the kidney gives by far the best prognosis, both as to life and for the recovery of the organ. Hematuria is usually present, but may be absent from an occlusion of the ureter by clots. The urine is usually voided naturally, although it is mixed with large quantities of blood. Hematuria following injury to the loin or lumbar region is not always symptomatic of ruptured kidney. If clots of blood block up the ureter, the blood and urine cannot reach the bladder and must remain above the obstruction.

The symptoms of severe injury to the kidney or ureter are frequently so indefinite and obscure as to make a diagnosis extremely difficult. The urine may be passed normally and show no sign of any injury. Collapse invariably follows the accident, and is accompanied by pain in the lumbar or hypochondriac region, vomiting, and an anxious countenance. If along with the other symptoms the urine contains blood and blood-casts, which in a few days begin to gradually disappear, it is safe to believe that the kidney has been contused or slightly lacerated.

If, on the other hand, there is a history of severe injury to the abdomen or loin, followed by faintness, anxious countenance, coldness, vomiting and severe abdominal pain; if the urine contain blood in quantities, either clotted or mixed, immediately or within a day or so after the accident; if in several days pus appear as well as blood; if there is rigidity of the lumbar or abdominal muscles and ureteral pain with retraction of the testicle; and if these symptoms are followed by enlargement of the lumbar and hypochondriac regions, with percussion dullness, we may be fairly sure that extensive renal laceration has occurred. Rupture of the pelvis of the ureter is extremely rare; in a few cases reported the tear was so close to the hilus of the kidney that practically they may be considered as rupture of the kidney itself. The position of the ureter protects it from the class of injuries under dis-

cussion. The symptoms are the same and the treatment identical.

With few exceptions, it is my practice, in exploring the kidney or its space, to carry the incision through the loin, beginning it over the outer border of the erector spinæ muscle, prolonging it obliquely inward, downward and forward. In this wise not only the kidney but the ureter as far as the brim of the true pelvis can be explored without opening the peritoneal cavity. The patient should lie upon the opposite side with a hard pillow under the corresponding flank.

The exposure afforded by this incision and the position of the patient offers increased facility when dealing with the renal vessels.

The stomach is less frequently injured than are the intestines, on account of the position it holds, being protected laterally and partly in front by the ribs and costal cartilages, also by the liver, and from the fact that it is partially surrounded by the intestines. It has been found lacerated in connection with injury to the other abdominal viscera. The rent in the stomach wall may be partial or complete, or the entire organ torn across.

It is not uncommon for a patient in whom the stomach has a complete laceration to succumb immediately after the receipt of the injury.

The stomach is most frequently torn near the pyloric extremity; however, lacerations have been found on either curvature, and the organ has been found completely torn across. In the latter instance this always occurs at or near the pylorus.

Rupture of the large or small intestine, as in the case of the stomach, may be partial or complete. Partial rupture may not be directly followed by any diagnostic signs.

The ileum and jejunum are the most frequent seats of intestinal rupture. The perforation of the bowel may be either primary or secondary to pressure necrosis.

Leakage of the contents of the bowel does not always follow intestinal rupture, although this is more liable to occur when the intestines are filled.

The symptoms of gastro-intestinal rupture are seldom typical; in some instances there is great shock, collapse, nausea, or vomiting, with agonizing pain, followed in a few hours by dissolution; while in other instances the patient will be able to enter the vehicle unaided, or even walk to his home or to the hospital with but slight assistance. Pain may be absent altogether, or it may not appear for several days.

There are many symptoms common to both gastric and intestinal rupture. I will, therefore, describe them together.

The symptoms to be considered are those which follow immediately after the receipt of the injury and those occurring secondarily.

The immediate symptoms are faintness, collapse, agonizing pain, either localized or general, weak, rapid pulse, thirst, vomiting, tympanites and rigidity of the abdominal walls, accompanied by extreme tenderness. The facial expression is indicative of the serious nature of the intra-abdominal lesion.

We should never wait for secondary symptoms if the patient's condition warrants operative interference.

The diagnosis, under ordinary circumstances, is not a difficult one to make; acute pain, tenderness, rigidity, vomiting or bloody stools being present, there should be no hesitancy in advising immediate operation. Any one of the foregoing symptoms may be absent. There is always, however, marked rigidity, tenderness and pain; these in themselves should be considered sufficient evidence.

Where operation has not been resorted to the above symptoms may redevelop, at a later period, in an insidious and unexpected manner, and the patient suddenly expire from either shock or general septic peritonitis, due to intestinal perforation from pressure necrosis.

The prognosis of gastro-intestinal rupture is exceedingly grave unless immediate operative measures are instituted. The fatal result is usually from shock, hemorrhage or peritonitis.

Incomplete tears of the stomach do not produce sufficient symptoms to render their recognition possible. They are met with, however, in conjunction with injury to the liver or spleen. Under such circumstances they may be disposed of by the introduction of Lembert sutures. To repair complete tears of the stomach the mucous membrane should be united with a continuous or interrupted suture, the muscular and serous coats by the continuous Lembert suture.

When the wound is in the immediate neighborhood of the pylorus, and particularly if it is longitudinal, it will be necessary to introduce the sutures in the line of the long axis of the stomach in order to avoid constriction of the orifice, as in the operation for pylorectomy for stricture.

In lacerated wounds of the stomach it may be necessary to pare the edges in order to secure perfect apposition.

When there is a considerable area of contusion with ecchymosis of the walls of the organ rendering the stitches less likely to hold, an omental graft may be necessary.

When the stomach has been completely torn across, the two portions are united by a double tier of sutures, the first including the mucous membrane, and the second the muscular and serous coats.

What has been said of the repair of wounds of the stomach is also true of the intestines under the same conditions, with the exception of a complete tear of the bowel, when it may be best to invaginate either end of the torn bowel and perform lateral anastomosis after the method devised by your worthy president, Dr. Murphy.

Rupture of Stomach.—J. B., aged 19 years, was admitted to the German Hospital, March 25, with the following history: About half an hour previous, while driving a wagon, he was run into by a trolley car, thrown from the wagon, and was struck by his horse upon the abdomen. Though suffering pain, he got up, but in a few minutes had violent epigastric pain, vomiting and dizziness, without loss of consciousness. He was brought to the hospital in the patrol wagon, walked unaided into the dispensary and was at once admitted. His temperature then was 97 2-5° F.; pulse-rate 96; he had severe pain over epigastrium and spasmodic attacks of vomiting; no blood in vomitus. Tenderness was marked over the entire abdomen and the rigidity was pronounced, particularly over the recti muscles. Vomiting continued, pain increased despite two hypodermic injections each of one-sixth grain morphine sulphate; at no time, however, was blood found in the stomach contents ejected.

Diagnosis was made of internal hemorrhage and immediate operation decided upon.

Upon opening the peritoneum about one pint of dark, partially clotted blood spouted out; the pelvis contained no bleeding point, the incision was prolonged upward, and the bleeding was found to come mainly from recently broken adhesions about a highly-inflamed and infiltrated appendix. Grains of corn and particles of food being noticed, the cecum and intestines were carefully and rapidly examined, but no rupture could be detected. The abdominal cavity was irrigated with a warm normal salt solution; the incision was again prolonged, and a rent in the great curvature of the stomach was found four inches long, extending almost to the pylorus. The opening was closed by Lembert sutures, the abdominal cavity again irrigated, and the wound closed.

The boy was in fairly good condition after operation; peritonitis developed, however, and death ensued forty-eight hours afterward.

The mesentery may be torn in one or more places, from which large quantities of blood are lost.

H. M. C., colored, aged 16 years, was admitted to the German Hospital on the evening of December 3, 1894, with the following history: While playing about some moving freight cars he was accidentally caught between the bumpers, sustaining an injury to his abdomen. Examination upon admission failed to disclose any evidence of external injury. The introduction of the catheter drew clear urine. There was a moderate degree of shock, and the patient complained of severe pain in the abdomen and tenderness on palpation. Further investigation proved negative.

The resident surgeon, not deeming the case of sufficient severity to send for me, treated the patient for shock. When I examined the patient upon the following day, it was very evident from the severity of the abdominal pain and the tenderness associated with decided rigidity of the abdominal walls, that he was suffering from a serious intraperitoneal lesion. I decided to open the abdomen at once. As soon as the peritoneal cavity was opened a large quantity of dark liquid blood escaped. The small intestines were delivered, when the cause of the lesion was found to be a ruptured mesenteric vein, the bleeding from which was arrested by the presence of a large diffused blood clot occupying the interval between the layers of the mesentery. To make sure that there was no other lesion, the large

intestines, the stomach, the liver and the spleen were carefully examined, but with a negative result. The abdominal cavity was washed out with warm saline solution, glass drainage was introduced into the pelvis and the wound closed. Recovery was uninterrupted.

L. C., male, Italian, aged 35 years, was admitted to the German Hospital, with a history of a fall of about fifty feet, striking upon his abdomen. He was profoundly shocked and exsanguinated. The only external evidences of injury were some slight cuts on the hands and head. From the peculiarity of the pain which was associated with abdominal rigidity, a diagnosis of internal hemorrhage was made, and the abdominal cavity was opened. Dark liquid blood escaped as soon as the peritoneum was opened, and the source found to be the mesenteric vessels. The mesentery was torn half-way across and the intestines lacerated in four places. The mesentery was united with a series of catgut sutures, and the rents in the intestines closed with Lembert sutures. The abdominal cavity was washed out with hot saline solution and closed. He died two hours after the operation.

A very interesting and unusual case of secondary perforation of the intestine, which recovered from the acute symptoms, only to develop, after five months, a fecal fistula, is reported by Dr. Paul F. Eve.*

The patient, a brakeman, was injured by falling between the engine and car, his body being caught between the bumpers of the same. He was unconscious for several hours. When Dr. Eve saw him first he was still suffering from shock, and complained of great pain in abdomen and back. He had several vomiting spells, the vomited matter being dark in color and of an unpleasant odor, vomiting commencing three hours after injury. An examination of the back and abdomen brought on attacks of nausea, followed by vomiting of dark, offensive, stercoraceous matter. Examination of the back, after the patient became quiet, revealed two large excoriations extending from the ninth dorsal vertebra to the sacrum. There were no excoriations or evidence of internal injury on the abdomen, although it was tympanitic and tender. He had no action of the bowels for five or six days prior to injury. Temperature 101° F., pulse 130, respiration 28. Free evacuation of bowels was followed by decrease in the pain; the pulse became stronger, temperature fell to 100° F., and the abdomen became flaccid. An examination of the abdomen at this time was negative. The patient slowly improved, and by the end of the fifth week was able to get out of bed and to walk about the room. About the sixth week he complained, however, of some colicky pain in the abdomen, which was attributed to fermentation of food. About the ninth week he was taken suddenly with severe pain in the bowels, accompanied by very audible gurgling sound and a knotting of the intestines, which could be plainly felt through the abdominal walls. Some weeks after a tumescence developed in the hypogastric region, extending to the left inguinal and reaching as far back as the lumbar region. There was no fluctuation. Upon the following day an abscess broke and a large quantity of pus accompanied by gas of a decidedly fecal odor was discharged. The following day fecal matter escaped through the opening. An operation for the relief of the fistula was performed, but the patient rapidly sank and died shortly afterwards.

An autopsy was made upon the following day, and, strange to say, the peritoneum was almost normal in condition, save in the portion around the fistulous tract. There were evidences of inflammation of the solar plexus and the splanchnic nerves.

The early recognition of rupture of the bladder is of paramount importance to a successful termination of a case. The delay for even a few hours of the recognition of this condition may be followed by disastrous results. Rupture of the bladder may be partial or complete and intra- or extraperitoneal. Of the two forms of rupture of this organ the intraperitoneal is of necessity the graver condition. Ordinarily there should be little difficulty in determining the presence of rupture of this viscus. When a patient presents the history of abdominal contusion the bladder should be the first organ explored. The introduction of a catheter into the bladder will definitely settle the question of its rupture. If, upon the introduction of the instrument, no urine escapes, but instead a few drops or a considerable quantity of blood, the inference should be that the organ has been torn. Before the catheter

*International Medical Magazine, 1893 and 1894, Vol. II.

is withdrawn, a measured quantity of boric acid or normal saline solution should be injected, when, if the full amount thrown in is not recovered, there can be no question of the nature of the injury. If the tear be intraperitoneal, more liquid than that thrown in may be recovered or, perhaps, less; when this is the case after the first injection, therefore, it is advisable to repeat the injection two or three times.

Where the tear is so small as to prevent the free escape of the injected fluid, or where the opening in the bladder is valve-like, occasioned by a loop or intestine becoming herniated through it, this means of diagnosis may fail. In either event the prevesical space should be immediately opened, when it can be decided whether an extra- or intraperitoneal rupture exists. Some surgeons prefer to open the peritoneal cavity at once, believing that it offers greater advantages for exploration on account of the limited amount of room afforded by the prevesical space, for closure of the rent and for the placing of drainage. I cannot agree with the gentlemen taking this position, but, to the contrary, believe that it is best to first open the prevesical space, when it can be determined whether the rupture is extraperitoneal, and, if so, the necessary treatment to be carried out. If the rupture is found intraperitoneal, the abdominal incision is carried upward and the peritoneal cavity opened, when the rent is located and properly disposed of. In the extraperitoneal variety of rupture, the urine will escape in one of the following directions, namely, in the connective tissue around the neck of the bladder, along the sides of the pelvis, in some instances extending up to the kidney space, and between the anterior parietal peritoneum and abdominal walls. When the rent in the bladder is extraperitoneal, it is necessary to drain the prevesical space by a drainage tube carried through the abdominal incision; if the urine has found its way along the sides of the pelvis, drainage should be introduced laterally through an incision above and to the outer side of the middle of Poupart's ligament. The bladder is also to be opened by a lateral incision through the perineum.

In the event of diffuse pelvic cellulitis with abscess formation, in order to obtain the most thorough drainage, it may be necessary to drain posteriorly by the removal of the coccyx alone or in connection with a portion of the sacrum.

Injury to the vascular system.—The most important blood vessels of the abdomen which may be ruptured subcutaneously are the aorta, the celiac axis, the mesenteric, and the spermatic vessels, the vena cava, and the portal vein. The forces which usually cause rupture of these vessels are either of the percussive or crushing variety. If the force applied is not sufficient to cause rupture, the vessel wall may be weakened to such an extent as to produce an aneurism consecutive to the injury. This takes place when the inner coat of the vessel has been torn and the outer one weakened. Lever reports an instance where a female was injured by a sharp blow upon the abdomen which was followed by an aneurism of the common iliac artery.

The symptoms of injury to blood-vessels will depend, first, upon their size, whether the traumatism involved all the coats of the vessels, and if hemorrhage has occurred. When the injury has involved only the walls of the vessel the symptoms do not occur immediately, but appear later, the result of either diminished blood supply or gangrene. An artery and its accompanying vein may be torn simultaneously, and under such circumstances gangrene will invariably follow.

The diagnosis of injury to the vascular system is unsatisfactory at best, as the injury to the vessel or vessels may be complicated by an injury to the abdominal vescera, entirely overshadowing the blood vessel lesion.

The prognosis is grave under all circumstances, even when there has been only a contusion, for we must fear the possibility of future aneurism from weakened vessel wall the result of the trauma.

The almost universal fatality of intra-abdominal lesions of traumatic origin is so well recognized that it seems as if there could hardly be any question as to the wisdom of opening the abdominal cavity. I would not be understood as meaning that abdominal section should be used as a means of diagnosis, but, on the contrary, I believe that every known means, with attention to the most minute details, should be exhausted in establishing a diagnosis. When a diagnosis is impossible, abdominal section is justifiable only

when it becomes the last and only chance for the patient.

I have refrained from using the terms exploratory and diagnostic incisions, believing that they not infrequently serve as a shield to cover a lack of diagnostic ability. It is a moral obligation resting upon every physician and surgeon to develop to the utmost of his ability the highest diagnostic attainments.

Aseptic surgery has, undoubtedly, been one of the greatest boons to humanity that the nineteenth century has brought forth; but to me it seems that it offers a great temptation to men who have not had surgical training, and who, therefore, lack the requisite skill, to do operations which are not always necessary for their patient's good.

TRAUMATISMS OF THE EYEBALL.*

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I am sorry, indeed, that I have nothing to offer in regard to traumatisms of the eye which is new to the ophthalmologist, but I hope we may find it profitable to talk over some of the old things and perhaps put them in a new light. As we discussed the subject of foreign bodies in the eye at our meeting in Chicago, last year, I will confine myself at this time to a consideration of perforating wounds of different parts of the globe. I will not weary you with a report of cases, but will try to present, without being dogmatic, the principles which should guide us in the care of these important injuries.

Perforating wounds of the cornea usually heal promptly, if they are not infected, but are always followed by opacities which obscure the sight if they are at all central. If they become infected, but finally heal, the amount of scar tissue and opacity is much greater, and vision is often permanently and totally lost as the result of a wound of the cornea, which would have been insignificant but for its infection.

There is always great danger, too, that such a wound will lead to infection of the interior of the eye and destruction of the entire globe. Again, when the aqueous humor escapes after such an injury the iris is very apt to prolapse and become entangled in the wound, especially if the latter is large.

In eye injuries we are obviously limited in our antiseptic measures because of the delicacy of the tissue involved; therefore, the greater importance of absolute and invariable cleanliness. Sterilized water is as useful here as elsewhere and I believe that the addition of 3 per cent of boric acid or 2 per cent of borax makes it better and such solutions are always more efficacious and agreeable if used warm. After scrubbing the patient's face with soap and water the injured eye should be thoroughly but very gently irrigated or repeatedly flooded with hot water or one of the solutions above mentioned. If the iris is involved in the wound and the injury is not more than six hours old we should endeavor to replace it by gentle manipulation with a small, smooth spatula or other suitable instrument. If unsuccessful we should seize the protruding portion, draw it out gently and cut it off. We will usually find, after such an iridectomy, that the wound is clear, but if not we can usually make it so by careful use of the spatula. A few drops of a 1 per cent solution of atropine solution should then be instilled, to guard against iritis and closure of the pupil, the wound dusted with finely powdered iodoform, a bandage applied and the patient put to bed. I do not believe that we should touch a prolapsed iris that is more than six hours old unless the injury has been properly dressed at once and we are reasonably sure that the wound has remained aseptic; under such circumstances we may safely open the wound in some cases, even after twelve or twenty-four hours.

Penetrating wounds of the sclera are always serious because of the great liability of infection of the interior of the eye. We may usually know that an eye has been perforated by the loss of the tension or normal hardness of the globe as compared with that of the fellow eye, even if the wound is obscured by swelling and ecchymosis of the conjunctiva. If the perforation has opened the anterior chamber the latter will be shallow or obliterated from the escape of the aqueous humor. In the case of large wounds of the sclera the darkly pigmented uvea frequently protrudes, the prolapsed portion belonging to the choroid, the ciliary body or the iris, according to the location of the wound. If the uvea is also rup-

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, April 30, 1896.

tured the vitreous will present in the opening or may hang out of the wound. Rupture of the sclera and the uveal tract may occur in consequence of a blow upon the eye without injury to the conjunctiva. In such a case the lens is sometimes found lying beneath the unbroken conjunctiva or the prolapsed uvea and vitreous may form the contents of the bulging tumor.

When infection occurs in consequence of a penetrating injury of the eye the globe may be lost in either of two ways. We may have an acute, suppurative inflammation of all the tissues (panophthalmitis) or a less violent plastic inflammation chiefly of the iris and ciliary body (irido-cyclitis), the exudate becoming organized and the globe gradually shrinking.

Strangely enough, migratory ophthalmitis, so-called sympathetic inflammation, rarely follows the more violent panophthalmitis, in which the eye is often full of pus, but very frequently destroys the uninjured eye in cases of irido-cyclitis.

The prognosis is grave in all cases of penetrating wounds for the reason that the prick of a needle or of a hat pin may carry a fatal infection to the interior of the eye and the vitreous humor is an ideal culture medium. Wounds of the ciliary region are particularly dangerous, not only in leading to destruction of the injured eye, but in being followed by migratory trouble.

Before describing the treatment of wounds of the sclera a word in regard to foreign bodies is almost necessary. It is very seldom that an eye will tolerate the presence of a foreign body, although such bodies do sometimes become encysted and give no trouble for years. I therefore make it an invariable rule to enucleate every eye known to contain a foreign body which can not be removed. If the patient will not consent he must bear the responsibility. He should at least present himself frequently for examination and submit to excision at the first sign of inflammation. If we know that an injured eye does not contain a foreign body we must then consider the possibility of saving the organ to useful vision. Large wounds with extensive prolapse of the inner coats of the eye are always followed by shrinking and loss of sight and the ever present danger of sympathetic trouble should guide us in advising immediate removal or at least abscission and evisceration of the globe, which gives a better and more movable stump for a glass eye. I would also advise the immediate excision of an eye in which the ciliary body has been injured, even if some sight remained, unless the fellow eye was useless or had been removed.

When migratory inflammation has once involved the uninjured eye it is best to retain the injured one if there be any sight in it, for ultimately it may be the better of the two.

Any adult eye which is blind and remains continually tender is a source of peril and, being useless, should be removed, but if such an eye in a patient under twenty years can be kept quiet by treatment it is desirable to retain it, because the loss of an eye in youth retards the growth of the orbit and the corresponding side of the face.

If we decide that an eye which has sustained a penetrating injury can be saved, our first duty is to secure and maintain perfect cleanliness, as already described. Small wounds quickly close if kept clean and the patient maintains quiet. The eye should be carefully irrigated and dressed once a day with borated cotton and a snug bandage, best made of white mosquito netting and applied wet. Atropine, in 1 per cent solution, is the best local anodyne and usually all that is needed, but if there is much reaction and great pain, iced compresses, applied every five minutes by aseptic fingers, afford great comfort and check inflammation.

Larger wounds should be closed by sutures carefully taken through the conjunctiva and episcleral connective tissue. I cannot advise stitching through the sclera for the tissue is so hard that the needle often breaks out or goes through with a jerk which causes hemorrhage and otherwise disturbs the interior of the eye.

If the ciliary body or choroid presents in the wound it must be gently replaced, not cut off, and the scleral wound carefully closed over it with stitches. For suture material I have used for several years kangaroo tendon, furnished me by Dr. Marcey of Boston, which I can split to any desired size, easily sterilize in an aqueous solution of the bichloride and preserve indefinitely in alcohol.

DISCUSSION OF DR. WESCOTT'S PAPER.

Dr. D. Emmett Welsh, Grand Rapids: I do not think I can add anything to the remarks made by Dr. Wescott. They are all pertinent and I agree with him in every particular.

There is one point, however, that I would make and that is with reference to the use of eserine to contract the pupil instead of atropia to dilate it. This would depend upon the location of the wound in the cornea. In some instances it is preferable to use eserine to get the iris out from the edges of the wound. If any portion of the pupillary edge of the iris becomes attached in a wound in the margin of the cornea eserine, by its contracting power, will act better than atropia.

Dr. James M. Ball, St. Louis, Mo.: It may be I have misunderstood Dr. Wescott, but if I caught what he said correctly, he does not believe in replacement of the prolapsed iris after six hours. Is that right, Doctor?

Dr. Wescott: Yes, under the conditions stated.

Dr. Moore (resuming): Then I must take issue with the doctor on that point, and in fortifying my position, I wish to state that about a year ago I made three cataract operations one afternoon, two of them being made without iridectomy. The next day my assistant had two cases of iris prolapse. Forty-eight hours after extraction I placed the patients under chloroform and instead of replacing the iris made an iridectomy in each case with excellent results. Vision was good. These two cases show that prolapse of the iris can be removed forty-eight hours after the prolapse has occurred without detriment. I am well aware that the position taken by Dr. Wescott is held by many ophthalmic surgeons; at the same time, all of us have met with cases which are directly at variance with the teaching of the books. The advice given by the author of the paper in regard to replacing the prolapsed iris is exceedingly dangerous. It might do, possibly, in the hands of an oculist, and the possibility of replacing the iris and having it stay in position would be increased if eserine were used, but, as a matter of fact, I have seen eyes lost by panophthalmitis because the attending physician tried to push back the prolapsed iris, and the operation of iridectomy, if made under aseptic conditions, is perfectly safe, and there is no danger of infection as compared with the danger of the iris prolapse returning. Of course, if you push the iris back you evacuate the aqueous, and in the course of thirty minutes it reaccumulates, the wound has to be reopened, and the iris has to be dealt with once more. Many physicians seem to think that aseptic surgery applies almost to every place except the eye, and, as the essayist has said, one cannot be too careful about boiling his instruments, sterilizing them in every way possible. The oculist should pay particular attention to his own hands.

In making the statement that every eye which contains a foreign body which cannot be removed should be enucleated, I presume the doctor has overlooked that numerous class of cases in which the foreign body is lodged in the lens and remains there for many months, and in that class of cases we occasionally extract the cataract and secure a good result and give the patient a useful eye.

I am compelled to take issue with the doctor in another respect, namely, his advice for the immediate enucleation of an eye in cases of wounds of the ciliary body. A case in point: A man employed on the Illinois Central received an injury to his eye by a water gauge on a locomotive bursting, and as a result of which a piece of glass injured the cornea at the corneo-scleral junction and cut into the ciliary body. In this case there was prolapse of the iris. The attending physician, before I saw the case, had been using bichloride, but advised the man to consult an oculist. I saw him on the fourth day after the accident and immediately made an iridectomy, and I am glad to say that that man is now free from symptoms of irritation, and that he has useful vision in the eye.

Dr. Welsh spoke of the use of eserine in retaining the iris in situ after prolapse. Sometimes it will do it. I think a more efficient means is that which has been used for several years by Dr. Eugene Smith of Detroit, namely, the hypodermatic injection of small doses of morphia. About a year ago Dr. Smith published the results of one hundred cases of cataract extraction without iridectomy, and he generally makes use of the hypodermatic injection of morphia to prevent prolapse of the iris.

Dr. Wescott (closing): I am greatly indebted to Dr. Welsh for speaking of eserine, and also to Dr. Ball for his kindly criticisms. There are cases, unquestionably, where eserine seems to aid us in keeping the iris away from a wound of the cornea, which is more or less marginal. It frequently, however, as Dr Ball says, will fail. I have not tried hypo-

dermatic injections of morphia to retain the iris in situ after prolapse, but am familiar with the report of Dr. Smith. The chief reason for not mentioning the subject of eserine in the paper was because I strove for simplicity from start to finish, and also because of the great danger of iritis and closure of the pupil in all of these cases of injury to the cornea. In the cases where eserine would fail, it would certainly be better to use atropine because of its influence in preventing iritis.

In regard to the criticism of Dr. Ball about interfering with prolapse of the iris after six hours, I will refer to the paper. (Here Dr. Wescott read extracts from his paper, which pertained to the point under discussion.) Dr. Ball was speaking of an operation wound which he had unquestionably made aseptically and preserved in an aseptic condition. It is very different, indeed, opening such a wound and opening one due to traumatism, which has not been dressed, and which undoubtedly has had an opportunity to become infected.

In regard to foreign bodies in the lens, I quite agree with Dr. Ball, and his criticism is an addition to the paper in that respect. We do have small foreign bodies embedded in the lens which do not necessitate the removal of the eye at once, unless we know that they are septic, and it may be impossible to know when they are in such a condition. These small foreign bodies in the lens frequently cause swelling of the lens and an injurious inflammation of the eye, which calls for immediate action. In such cases we can sometimes save the organ by prompt removal of the lens, while in others we cannot do so, and must subsequently enucleate the eye after an attempt has been made to save it. Of course, there are cases of wounds of the ciliary body which have not been followed by loss of the eye or by ophthalmitis. I cannot advise you to assume the entire responsibility in any of these eye injuries if you can call to your aid an ophthalmic surgeon, but we all realize that the first treatment of a surgical injury of any part of the body is very important. You are called upon in emergencies to act at once whether you continue in charge or not. In any of these injuries you will, because of your own conscience, because of your loyalty to the best interests of your patient, consult an ophthalmic surgeon if you can. I have given what I think to be the best advice if you must act upon your own resources and without aid.

The Hour for Capital Operations.

Of the many questions that present themselves for solution in regard to operative cases, a by no means unimportant one is that of the hour for operating. A good deal may be said for almost any time that may be selected, and for this reason: It may be generally assumed that the hour selected is the one that suits the surgeon best. For many reasons we cannot find fault with the operator for taking such a time as seems best to accord with his other engagements. It has long been a recognized right of the patient not to be disappointed, if by any possibility this can be avoided, after the hour has been named and the preparations made for the operation.

In following the course of operative cases and various operators for a number of years in the hospitals of a large city, it has seemed to us that the early morning operation had a great many claims which entitled it to serious consideration by operators. A good night's rest, attained artificially if necessary, an empty stomach, the patient all ready for anæsthesia upon awakening, the fear and dread of what is coming being crowded into the fewest possible moments, the whole day with active attendants constantly moving about and alive to every demand of the patient, the ability to run in and see for one's self how the case is doing during the first 12 to 18 hours, without encroaching upon the practitioner's allotted time for sleep, are a few of the points which seem to recommend an early hour. On the other hand, it cannot be denied that it may be a source of greater task upon the surgeon's powers, especially if he be concerned and anxious, as always conscientious men must be in regard to capital operations, and if this anxiety interferes with the operator's sleep. Even with this disadvantage we still believe the operator capable of doing better work before he has become tired and annoyed by the various demands upon him during the early hours of the day. It would be impossible to compare the results, because we have no data with which to make a comparison, but we believe that the men who have operated extensively in the early morning hours have never returned to afternoon operations as a matter of choice. —Gaillard's Medical Journal.

Strange Record—I remembered having seen the heart of one that was bowelled as suffering for high treason, that being cast into the fire, leaped at first at least a foot and a half in height, and after by degrees lower and lower for the space (as I remember) of seven or eight minutes.—Bacon on Life and Death.

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HEALTH VS. MONEY.

It can be safely asserted that the great bulk of the ills of life arise from ignorance and vice, and this is particularly true regarding disease. It has been repeatedly said, and with truth, that the best and greatest wealth is health; that health is the foundation of all temporal enjoyment; that it is the one supreme blessing accorded to man and that without it all else is without value. Yet modern life, with all its vaunted progress, takes less heed of the health of man than it does of his finances. Hundreds upon hundreds of volumes delve deeply into the realms of thought regarding financial problems, every nook and corner of the brain is made to exhaust itself in explanation of some gilded theory, while the study of health is viewed with seeming commendation, but without the intense teeming and pertinacious thought bestowed upon money. That God-given boon, health, is viewed as a secondary consideration until disease takes its place, and then, and not until then, is the bounteous richness of health appreciated. Colton says: "There is this difference between these two temporal blessings, health and money; money is the most coveted, but the least enjoyed; health is the most enjoyed but the least coveted; and the superiority of the latter is still most obvious when we reflect that the poorest man would not part with health for money, but that the richest would gladly part with all his money for health." This may be true upon general principles; it may be true as a naked proposition, but in modern life the unbiased observer would, we think, come to the conclusion that health appears to be the least valued possession of man. System, application and intensity from first to last, mark the study of the acquirement of wealth, while there are only isolated instances of the study of health. We have prime ministers and secretaries of finance in the interest of money, but none for health. Money is eternally and zealously guarded, while health is viewed as not precious enough to foster study, not important enough to be guarded by sustenance of government and continuous employment of intellect.

In this electric age of ours, tension, extreme tension, is our constant condition; the grinding wear and tear of intellect, the exhausting, ceaseless labor of mind, the continued neglect of muscular exercise, the faults of living, the emotional excitement of political and business interests, all are tending to cause diseased mental conditions. Health is only thought of when we are menaced by epidemics or when disease manifests itself with the rulers of a realm. Were but half of the thought given to a consideration of the health of man individually and en masse that is given to the acquirement of riches, the result would be a far-reaching benefit in the prosperity of nations. As Voltaire has said: "The fate of a nation has often depended upon the good or bad digestion of a prime minister," and it is likewise true that a nation must depend upon the healthful function of its citizens' brains and bodies for its perpetuity. It is a deep and unknown quantity but yet a readily imagined one, how fertile a cause unhealthy mentality is in the production of violence, discontent and revolution. There can be no doubt that faulty environment, unhealthy habits and the by-play of degenerate minds are potent factors in the production of emotionalism and when once this is created it readily leads to discontent of the masses, violence and revolution.

We believe that a judicious study of the

health of man en masse, in various populous places, and the proper application of hygienic and preventive measures would result in less agitation. Certain it is that health of mind and body lead, as a general thing, to healthful and normal products. We believe that nations can become diseased the same as individuals, particularly in a mental way and emotionalism incidental to the faults of civilization has shaken the foundation of governments more than once and will continue to do so until a proper study of health shall be indulged in. Again, we are of the opinion that the nation has not yet existed which has performed anything like its best function, for just so long as it studies and considers its monetary interests as more vital than health, just so long will all government be unstable, discontent continue, upheavals be frequent and wars of constant occurrence.

If man at large was treated with half the consideration that the breeder of cattle treats his cattle, the result would be of eternal benefit to nations and society. All nations which ignore the health of their people engender their own ultimate fate. Commercialism is cold and sordid and never has reached humanity enough to protect the people of a nation as it should.

Humanity, in administration of a nation's affairs, must consider health as a paramount object. Under the existing order of things, this is not done, hence disease-producing elements are rendered potent.

Iowa State Association of Railway Surgeons.

The third annual meeting of the Iowa State Association of Railway Surgeons will be held at Marshalltown, Ia., October 15 and 16, 1896.

There are about three hundred railway surgeons in the state and they should meet and become acquainted. If all will co-operate this can be made one of the best societies in the West.

A program will be prepared in September and we hope to publish a copy.

The following members are chairmen of their respective committees: Arrangements, H. L. Getz, Marshalltown; transportation, D. S. Fairchild, Clinton; Judicial, J. N. Warren, Sioux City.

Physic, for the most part, is nothing else but the substitute for exercise or temperance.—Addison.

Extracts and Abstracts.

Contraction of the Flexors of the Hand Cured by Shortening the Bones of the Forearm.

Contraction is caused by muscles which are too short in proportion to the distance between their points of insertion. Professor Henle of Breslau says that there are two ways of getting rid of this disproportion; either by lengthening the muscles or by shortening the bones. If the first operation is not successful, then try the second; the muscles that are not contracted will easily accommodate themselves to the shape of the bones unless the latter be excessively shortened.

Author operated upon a boy nine years of age, who had broken his forearm. The fracture united well in a plaster bandage, but the fingers and wrist remained contracted in flexion. If the fingers are bent the wrist can be extended, and if the wrist be bent, the fingers may be freely moved.

After chloroform narcosis, author opened the arm over the point of fracture, and resected two cm. of both bones. Movement of the wrist was possible with extended fingers. The bones were then sutured.

A photograph taken three weeks later with Roentgen's apparatus showed an opening filled with callus. Massage was used. Five weeks latter consolidation was nearly complete. Later the fingers move freely and the wrist nearly so.—Centralblatt f. Chirurgie.

Treatment of Ankylosis of the Hip.

Lorenz (Berliner Klinik, June, 1896) is opposed to the practice of subtrochanteric osteotomy in cases of osseous ankylosis of the hip-joint. He asserts that by division of the femur below the trochanters, the malposition of the lower limb cannot be overcome without further shortening due to the angular bend of the shaft of the femur at the seat of section. A much better treatment, it is argued, is subcutaneous division by chisel and mallet of the osseous bond between the head of the femur or the remaining portion of the neck of the bone on the one hand and the external surface of the ilium on the other. The operation, as applied to the most frequent conditions of ankylosis of the hip, in which the head of the femur has been absorbed, is called pelvi-trochanteric osteotomy. Several advantages are claimed for this method. The osteotomy being what is termed a linear one, the external wound is very small, and the operation may be easily performed, and produces very little disturbance of the soft spots. As the correction of the deformity is affected by an immediate attack on the angle causing the malposition of

the limb, there is no interference with the shaft of the femur, the length and normal direction of which are still maintained. It is stated that no difficulty will be experienced in restoring the normal position of the limb if, at the same time, the adductors and the muscular and fibrous structures in front of the joint be divided subcutaneously. The relations of the surfaces of the divided bones to one another are very favorable to a restoration of the proper direction of the limb, whether this be fixed in a position of flexion, abduction, or adduction. The after-treatment in cases in which pelvi-trochanteric osteotomy has been performed is extremely simple, as there is no necessity for long confinement of the patient, who, by the application of a plaster apparatus to the affected limb, and by elevation of the opposite foot on a patten, may be enabled to leave his bed on the fifth or sixth day. This operation, it is held, besides effectually removing the fixed osseous deformity will, provided the after-treatment be carefully attended to, in all probability, result in the formation of a movable joint, and in the restoration of the seriously impaired muscular action of the limb. These conclusions are based on the results of six cases in which pelvi-trochanteric osteotomy has been performed by the author, full reports of which are given in this lecture.—British Medical Journal.

Death Under Chloroform.

J. Hopkins Walters, M. R. C. S., Eng., surgeon to the Royal Berkshire Hospital, has recently reported the following two cases, one of death and the other of threatened death while under chloroform, in the London Lancet:

Case I. A boy aged six and a half years was anæsthetized by chloroform on March 27, 1896, for the removal of tuberculous cervical glands. In other respects he seemed to be healthy and had returned only a few weeks previously after being five months at the seaside. The operation was performed at 10:30 a. m., a breakfast-cupful of beef tea having been taken at 8 a. m. in lieu of breakfast. The glands were large and numerous; the surrounding tissues were infiltrated and unusually vascular, rendering the dissection down to the sheath of the vessels delicate, difficult and prolonged. There was free hemorrhage, amounting, probably, to three or four ounces (but this is always most difficult to estimate; it possibly might have been more; not much). The operation was almost finished when sudden arrest of oozing from the raw surface was noticed to take place, while at the same moment the experienced anæsthetist who was kindly giving the chloroform drew attention to the patient's pallor. I give in my friend's own words the notes he has made on the case: "The boy had been under chloroform for about forty-seven minutes, during which time he took the anæsthetic in a manner that gave rise to no more than ordinary anxiety. The first unfavorable sign noticed by me was a sudden and extreme pallor, not the bluish gray of respiratory failure, but a deathly whiteness. After a few seconds the breathing stopped. Immediately the radial artery was felt, but there was no pulse. The heart was auscultated, but there was no pulsation. Artificial respiration was at once performed, with the result that a very irregular sighing or gasping respiration was established. During the artificial respiration the air entered and left the lungs quite freely. The tongue was pulled out forcibly with tongue forceps and kept out while artificial respiration was maintained for three-quarters of an hour; nitrate of amyl was administered, and brandy and strychnia were hypodermically injected." In addition to the above friction was made over the heart while the head was depressed and the body raised, but all to no purpose. The child was dead.

The case of threatened death under chloroform presents similar features to the above fatal case, but was followed by a happier result.

Case II. A child aged seventeen months, the subject of large double inguinal congenital hernia, was put under chloroform for the operation of radical cure. The child took the anæsthetic well and was fully under its influence when the incision was made. Two sweeps of the knife were followed by the application of a sponge, and on making the third sweep I noticed that blood ceased to flow. Looking round I found the child deathly white and apparently dead. Neither radial pulse nor heart pulsation could be felt. Artificial respiration was at once performed, the pulse returned, and in a few minutes the child had so well recovered as to enable me to complete the operation I had begun. In consequence of this contretemps I decided to postpone operating on the other hernia until after recovery from this operation. Owing to a little gastric disturbance the second operation was not performed for two months, and previously to the chloroform being given I warned the administrator, who had also been the chloroformist on the former occasion, to take especial care on account of the previous narrow escape. At the same stage of the operation apparent death recurred in a manner precisely similar to the previous occasion, with like treatment and fortunate result, followed, as before, by completion of the operation. This time we all were quite on the alert, and were thus able to make sure that it was a case of heart failure, the pulse stopping before respiration ceased.

These two cases present the following iden-

tical features: (1) both were children within the age at which chloroform can be given with the greatest immunity from accident; (2) auscultation indicated a sound heart in each case; (3) on each occasion a Skinner's inhaler was used; (4) in neither instance was the operation commenced before the conjunctival reflex had disappeared; (5) in each the first indication to the operator was blanching of the wound coincidently with the observation by the anæsthetist of sudden general pallor; and (6) uniformly the cause of death and threatened death was cardiac failure. The differences between the cases are that while the fatal case showed no unfavorable symptoms until the end of the operation the other exhibited them at the beginning; the one had taken a quantity of chloroform and the other little; the one had suffered loss of blood and shock from the operation and the other none. These probably were the determining factors between death and recovery. On comparing with the "respiratory failure" dictum from Hyderabad the statistics of the Lancet commission appointed to investigate the subject of the administration of chloroform and other anæsthetics from a clinical standpoint,* one is struck by the enormous majority of reported primary pulse failures, which, together with the numerous cases of accidents occurring in the very earliest stage of chloroform administration, indicate that much has yet to be learned of the causes of these calamities. The observations of Rosenberg and Guérin seem to throw on them some light, and their conclusion that respiratory and cardiac depression are due to reflex rather than direct action deserves careful investigation. Certainly, until such conclusion is negatived or confirmed, the suggestion to avoid nasal inhalation or to neutralize the local effect of chloroform by thorough cocainization of the nasal cavity is worthy of universal adoption. That ether is so much safer than chloroform as to outweigh the great advantages of the latter has still, I think, to be proved after the honest tabulation of its delayed disastrous after-effects.

*Reading:

Report of Two Fatal Cases of Hæmaturia.

Dr. Thomas H. Manley of New York reports the following interesting cases in the Indian Lancet for April 1, 1896:

It is well known in genito-urinary surgery that the sources of hæmaturia are exceeding numerous, and, that it is a symptom of a vast number of various pathological conditions along the urinary tract. It is seldom, however, that mortal exsanguination directly follows from it, inasmuch as we are usually able to control or moderate it, by appropriate measures.

But, one case of it has come under my care in the male.

The patient was a vigorous young man, a carpenter by trade, who had fallen from a staging, about forty feet and fractured the body of the second lumbar vertebra. When he entered the hospital he was wholly paraplegic.

Shortly afterward, the house-surgeon noticed that there was a marked distension in the hypogastrium, and watery blood was trickling from the urethra. In the meantime the patient was deathly pale, with a thready flickering pulse, but, whether this was dependent on shock from the injury or the loss of blood was doubtful.

A catheter of larger caliber was now introduced into the bladder, when an enormous quantity of urine, thickly mixed with clotted and pure arterial blood issued through. In fact, fresh, warm blood continued to flow away after the urine was evacuated. Acided, acidulated drinks and stimulants were given, the bladder washed out with astringent solutions and ice applied over the loins.

The bladder soon filled again, and unconscious to the patient the discharge of blood recommenced from the penis. The house-surgeon now "rattled," tied a string around the root of the penis and sent for me. About an hour later, when I arrived, the patient was near the moribund state. The bladder had distended again, so that its summit reached the umbilicus. Over the region of the left kidney there was a tumor, fairly well defined, that produced a distinct bulging.

It was now evident that there was an extensive renal laceration of the cortex. It was evident too, that his only hope now lay in an immediate nephrectomy.

It was a serious question, though, if he now could survive this operation, which, in his sinking condition, might be impracticable, without serious consequences. After the various aspects of the case were submitted to him, he declined to undergo it. It was fortunate he did not, for he soon showed signs of approaching death and sank six hours later. His family peremptorily denied us the privilege of an autopsy.

This case, now on the records of Harlem Hospital, was entered on the 5th of November, 1892, in the surgical division, then in the immediate charge of Dr. Frank Hammond, the resident house-surgeon, and is recorded here, as a contribution to the literature of fatal traumatic hæmaturia, of a renal origin, dependent on spinal fracture.

The woman whose case will now be related, succumbed, from hæmaturia of pathological origin, in the bladder. She had cancer. In the vast majority of cases of cancer when the

growth does not start from, or impinge on some tubular structure, the integrity of which is essential to life, pain, loss of rest, etc., tends to cut off the afflicted part, but in the majority of cases, copious and oft-repeated hemorrhage does the fatal work of devitalization. In this case it did it with surprising swiftness.

On the morning of February 5, this year, Dr. James Moran of this city, called me in consultation to see a woman, whom he first saw early the evening previously.

She was of Scotch birth, medium size, rather spare build; she was 61 years old, a widow, who had given birth to seven children, at term.

There was no history of malignant disease in her family, and she, herself, had always enjoyed fairly good health, up to the present time. For about two months before she had experienced more or less smarting in the bladder on urinating, and lately, had more or less straining and tenesmus, after voiding her urine.

Until the evening before, she was never aware of having passed blood in micturition. She had called the doctor because, in yielding to a desire to urinate she had passed but a few drops, when the flow ceased, and this was soon followed by the most acute vesical distress. The doctor on catherization evacuated more than a quart of urine, loaded with clots, and intermixed with bright colored blood. This brought immediate relief. Three hours later, at 11 o'clock, he was again hastily summoned to her for further aid; as she was again suffering from the same ensemble of symptoms.

This time the quantity of urine drained away was less, but it was so thickly intermixed with blood-clots, that it was with difficulty conducted through the catheter.

Chloroform Narcosis and Albuminuria.

V. Friedländer (Vierteljahrsschrift f. gerichtl. Med., Dritte Folge, Bd. viii, Supplement. Heft p. 94) investigated the urine of 100 male patients before and after chloroform narcosis, with reference to albumen and nucleo-albumen. Sixteen cases showed normal urine before and after anæsthetization, the narcosis having lasted thirty minutes to two hours. Thirty-seven cases, in which the urine, before narcosis, was normal, showed afterward an albuminuria which almost invariably lasted only a short time. Forty-seven patients had a slight degree of albuminuria already before narcosis; in 22 no difference in the amount of albumen was noted afterward; in 9 cases the albuminuria was lightly increased; in 1 case a pathological urinary sediment was passed. In 7 cases the amount of albumen diminished or disappeared completely. This occurred also in 6 cases in which there was a considerable amount of albumen in the urine before narcosis. The urinary sediment, which was found in 17 cases, consisted of casts and renal epithelium. The author considers that the alteration of the kidney is a tissue lesion which removes the power of inhibiting the loss of serum albumen, the causes of which lie in the poverty of oxygen in the blood, the destruction of blood corpuscles by the chloroform, the injury to the tissues by the liberated chlorine, and lastly, the lowering of blood pressure. As evidence for the occurrence of a tissue lesion, the author regards the fact that in 44 out of 56 cases investigated upon this point, after narcosis, the urine contained nucleo-albumen. —British Medical Journal.

Case of Sternal Dislocation of Second and Third Costal Cartilages and of Clavicle, with Fracture of Fourth and Fifth Cartilages.

Dr. Andrew J. McCosh of New York, surgeon to the Presbyterian hospital reports the following interesting case in a recent number of the Annals of Surgery: A man thirty-five years of age, was admitted to the Presbyterian hospital, February 21, 1895, who, in an attempt to jump onto the front platform of a slowly moving horse car, had slipped, and being caught between it and an iron pillar had been crushed and rolled between them, the space being six inches wide. The patient was a large man, his chest measure being forty-two inches. He fell to the ground and the car was thrown off its track. For a minute or so he was stunned, and then rose, entered another car, and managed with great difficulty and suffering to ride to the hospital, the distance of a mile. On admission it was evident that his distress was very great. He was suffering from severe dyspnœa and was markedly cyanotic. Every respiratory movement caused intense pain. He had frequent cough with bloody sputum. He could not lie down, but sat up in bed. Pulse 140; temperature 100½° F.; respiration 48. Urine contained a trace of albumen and of sugar; specific gravity 1030. On examination there was subcutaneous emphysema of the neck and upper anterior part of the chest. On inspection it was seen that the clavicle and upper ribs were jammed backward. On passing the finger along the left border of the sternum it was found that the clavicle, second, third, fourth, fifth, and possibly the first ribs had lost their attachment to that bone and were dislocated backward and inward. The clavicle was displaced upward well above the top of the sternum and inward one and a half inches, where its sternal end pressed against the trachea. The second, third, fourth and fifth ribs were

displaced backward and inward, so that their sternal ends were situated opposite the middle of the sternum (inward displacement one inch), and about two inches behind that bone. The exact position of the first rib could not be ascertained. The depression for the second and third ribs on the left border of the sternum could be distinctly felt, and it was evident that the costal cartilages of these two ribs had been dislocated from the sternum, and apparently were still attached to the ribs. The sternal facets for the attachment of the fourth and fifth ribs could not be felt, but in their place attached to the sternum was felt a projecting piece of cartilage about half an inch in length. It was evident that these two costal cartilages had been fractured near their middle, and one-half remained attached to the sternum, while apparently the other half remained on the end of the rib.

The sternal end of the clavicle was raised without much difficulty onto the anterior surface of the sternum. This gave marked relief. It was necessary to hold it in this position during the further manipulations, as it was easily displaced. Attempts were then made to spring the ribs into position. The shoulders were pulled back and the spine hyperextended, both by steady pressure and by jerks. These attempts caused pain and were only partially successful. The inward displacement could be reduced, but the backward could not be perfectly corrected, a displacement of half an inch still persisting in spite of the use of very great force. In order to keep the shoulders back, and thus reduce the deformity, various appliances and bandages were employed, but all they caused so much distress and so increased the cyanosis of the upper extremities that after repeated trials they were abandoned, and the patient was left sitting up in bed against a bed-rest with a pillow between his shoulders, and with the caution that he should keep them as far back as possible. He faithfully followed out the order, and he also found he was more comfortable in this position.

February 22. Distress and dyspnœa during the night had been great. Cough almost constant with bloody expectoration. Temperature 100° F.; pulse 130; respiration 24 to 36. Arms were tied behind, the pillow pressed into the hollow of his back.

February 23. Temperature 101° F.; pulse 124 to 140; respiration 46 to 56. Subcrepitant râles over left chest. Dyspnœa and cough severe.

February 24. Temperature 100½° to 102° F.; pulse 130 to 136. Delirious. Consolidation of entire left lung and effusion in pericardium.

February 25. Temperature 100° to 101° F.; pulse 120 to 130; respiration 34 to 44.

February 26. Dyspnœa less. Temperature 101° F.; pulse 124; respiration 32 to 40. Pericardial effusion diminished.

February 27. Temperature 100° F.; pulse 112; respiration 32 to 40. Less cough; more comfortable; lung clearing.

March 1. Steady improvement. Temperature 99° to 100° F.; pulse 110 to 120; respiration 30 to 36.

March 5. Temperature 99° F.; pulse 110; respiration 28. A broomstick handle was placed through his elbows behind his back. Cough almost disappeared. Dyspnœa slight; appetite good; free from pain. Clavicle retains its position on anterior surface of sternum, and ribs remain displaced backward for a distance of one inch.

His pulse, temperature and respiration soon sank to normal. He sat up night and day with the staff behind his back and through his elbows, which were bandaged to it. On March 8 he sat up in a chair. On March 23 he began to walk. On April 5 he was allowed to pass part of the day without the staff. The ribs and clavicle seemed firmly fastened in their new situation. There was no pain on manipulation of his chest. His general health was excellent. No cough. On April 6 he was discharged cured. On May 1 he was able to resume his work, and since that time has felt perfectly well. He suffers no pain, and would not know that he had been injured except when he attempts to lift a heavy weight, when he feels some weakness of the left side of chest.

Removal of the Entire Clavicle for Osteomyelitis; Complete Regeneration of the Bone.

At a recent meeting of the New York Medical Society, Dr. F. W. Murray presented a boy, fourteen years of age, with the following history: In May, 1895, he accidentally fell from a canal boat into the river, and was thoroughly chilled through. A few days afterward pain set in over the outer end of the left clavicle, febrile symptoms soon followed, and an acute osteomyelitis of the bone rapidly developed. In June he entered St. Vincent's Hospital, where the abscess was opened and the bone was scraped. In August he entered Dr. Murray's service at the New York Hospital. His general condition was fair, the local symptoms had abated, and three sinuses were to be seen leading down to the diseased bone. One was situated over the acromial end of the bone, another just above and a third just below the center of the bone, and each sinus was discharging a moderate amount of pus. With the probe it was ascertained that practically the entire bone had been denuded of its periosteum, and that it was a case of total necrosis. Under ether the entire bone was exposed through an incision extending from its acro-

mial to its sternal end and was easily removed. The periosteum was covered with a layer of granulations of unhealthy appearance, and at one point on its under surface a small amount of new bony tissue had formed. The granulations were thoroughly curetted with a Volkmann's spoon and the wound packed with iodoform gauze, which was allowed to remain for a few days and then removed. The wound healed steadily and rapidly and the boy was discharged at the end of September with all the evidences of the formation of new bone. The boy did not appear again until two weeks ago, when it was found that an entire new bone had been reproduced. It is thicker than its fellow on the right side and there is some upward displacement at its acromial end. The left shoulder is slightly lower than the right, but the functions of the joint are perfect. There is a wing-like projection of the lower part of the dorsal border of the scapula, but it causes no interference with the motions of the arm and shoulder. While in the hospital the arm and shoulder were kept in proper position by a sling and bandage applied as in cases of fracture of the clavicle, and on his discharge the boy's parents were instructed to see that this position was maintained for several weeks. The instructions were neglected, and this fact may account for the slight drooping of the shoulder and the projection of the scapula at its inner border. Five years ago Dr. Murray exhibited a similar case, where he had removed the inner two-thirds of the clavicle for necrosis, following acute osteomyelitis. In this case, also, new bone was rapidly formed and the result was perfectly satisfactory.—Annals of Surgery.

Local Peritonitis.

Robinson (New York Medical Journal, January 25, 1896) concludes an investigation of local peritonitis as follows:

1. The local peritonitis of adults is hardly every directly fatal, but may produce a train of symptoms, such as indigestion, malnutrition, anemia and neurosis.

2. The peritoneal adhesions which demand operation belong almost exclusively to those involving the organs of high mobility and peristalsis, such as the small intestines, the sigmoid, the bladder and the Fallopian tubes (especially amputated ones).

3. Local peritonitis occurs at fixed bowel flexures, and at the longest range of muscular action associated with the peritoneum.

4. The etiology of the adult local peritonitis is infectious invasion through the gut wall.

5. The methods of transmission of infection are through abrasion of the mucosa aided by the trauma of muscular action on a bowel containing pathogenic microbes.

6. Local peritonitis does not occur in infants at bowel flexures, or especially over the long range of muscular action.

7. It is extremely rare to see an adult with a normal peritoneum, i. e., free from peritonitis.

8. The constant adhesions found around the gall-bladder and ceco-appendicular apparatus teach us that operations in these regions cannot be justified merely on account of the adhesions.

9. Adult local peritonitis seems to increase with age.

10. Peritonitis is nature's method of repair and prophylaxis. Peritonitis saves life, while infection kills.

11. Peritonitic adhesions seem to be able to organize and appear and act like normal peritoneum.

12. Local peritonitis occurs chiefly in the dorsal region, at the points where the mesenteries fix the digestive tract and close to the highest range of muscular action. Muscular trauma, abraded epithelia and infection tell the tale.

13. The track of the infection from mucosa to serosa cannot always be traced. A healthy mucosa (and even muscularis) may underlie many peritoneal adhesions, or a healthy serosa may be adjacent to diseased mucosa.

14. The dense adhesions of local peritonitis may result in strictures, malignancy, dislocated viscera, pain, restriction of peristalsis and immobility of organs—disease.

15. The peritoneum may have its endothelium abraded traumatically by muscular action, and the resulting healing be cicatricial; the matter of local peritonitis being a slow, gradual, evolutionary process of adult life.

Dr. G. T. Vaughan, Surgeon United States Marine Hospital Service, gives this description of the Dome at Bremen: "The Dome is an interesting structure, not only on account of its thousand years of existence, but from the peculiar properties possessed by an anti-room, namely, that of preserving animal bodies indefinitely. This room, built of stone, is some 30 or 40 feet in length, 15 or 20 feet wide, with an arched ceiling about 15 feet high. The air felt damp and cool. Its peculiar properties were accidentally discovered about four hundred years ago when a body placed there was found, after a long time, well preserved. Since then other bodies have been added, until there are fourteen in the chamber. The bodies are not specially prepared before being placed in this room. Every year the bodies of animals, as cats, dogs and birds, are placed here in order to see if the preserving property is still retained. They simply dry up without odor.—Marine Hospital Service Report, 1895.

Notices and Reviews.

BOOKS AND PAMPHLETS RECEIVED.

"The Western Medical Review" is a new candidate for favor in the field of medical journalism, and if we may judge from the copy which has reached our table, it promises very well. Number 2, volume 1, contains six well-chosen, original articles; an able editorial and a large number of interesting miscellaneous items. The Review is issued from Lincoln, Neb.

"A Treatise on Appendicitis." By John B. Deaver, M. D., Philadelphia. P. Blakeston Son & Co., 1896.

"Vaginal Stenosis and Atresia, with Report of a Case." By Edward H. Lee, M. D., reprinted from Medicine. July, 1896.

"Bassini's Operation for Inguinal Hernia put to the Crucial Test." By E. J. Senn, M. D. Reprinted from the Journal of the American Medical Association, May 2, 1896.

Perhaps the very newest medical journal which has come to our table is the "Laryngoscope," a monthly journal devoted to the diseases of the nose, throat and ear. It is ably edited by Drs. Frank M. Rumboldt and M. A. Goldstein of St. Louis, with the aid of ten associates. It is a handsome journal, the paper and press work are excellent, the articles well selected, and we wish the new venture success.

Manual of the United States Hay-Fever Association for 1896, containing a report of the annual and adjourned meeting of 1895.

COLOR, VISION AND COLOR-BLINDNESS. A Practical Manual for Railroad Surgeons. By J. Ellis Jennings, M. D., lecturer on opthalmoscopy and chief of the eye clinic in the Beaumont Hospital Medical College of St. Louis, etc. Illustrated; cloth, 109 pages. Philadelphia: F. A. Davis Co., Lakeside Bldg., Chicago, 1896.

This very interesting work is intended to aid the railroad surgeon in his examination of the employes of the transportation lines for the detection of color-blindness, and as such will meet the end it has in view. It will also be found instructive reading by the general practitioner. The author has taken pains to present the theories of the leading investigators of this subject, and their methods of detecting color-blindness, and has succeeded in compiling a manual which will commend itself to all who read it. The historical sketch in the first chapter is a pleasant introduction to the subject. Chapters two and-three are devoted to the physiological anatomy of the retina, and the physics of light and the sensitiveness of the retina to color. Chapter four treats of the theories of Young, Helmholtz, Hering, Preyer and the correlation theory, as expounded by Oliver. Chapter five is given to the classification of color-blindness, with its frequency dangers and the laws of heredity. Chapter six gives the methods of Holmgren, Thompson, Oliver and the author for detecting color-blindness. Chapter seven explains the tests for the quantitive estimation of the color sense. Chapters nine and ten are devoted to the Pennsylvania Railroad company's instructions for the examination of employes as to vision, color-blindness and hearing, and to a description of Oliver's series of tests.—Guilford.

We clip the following from a metropolitan paper:

"A cure for Apoplexy.—The Furet de Londres informs us that a German doctor has hit upon the following expedient to cure apoplexy, namely, to apply three or four brisk slaps (de frapper fortment) on the cheeks of the patient."

Slepidum caput! Verily, this looks like a dead sure cure, and doubtless is as equally effective as to pull just three hairs out of the extreme end of the tail of the gay, graceful and plethoric hippopotamus in order to cure "hippop" of an inflammation of the brain.

The rich patient cures the poor physician much more often than the poor physician the rich patient, and it is rather paradoxical that the rapid recovery of the one usually depends upon the procrastinated disorder of the other. —Colton.

A popular physician is a very important member of society, considered merely in a political view. The lives, limbs, health and spirits of a great part of the subjects of a kingdom depend upon his ability and honesty.—Knox.

Bob Bowdry used to say, when passing a chemist's shop, that he could always tell whether the medicine which was preparing was for a rich or poor man. If for the former the pestle would move slowly and said: "Linger longer, linger longer." If for the latter, however, it would travel "at the devil's own rate," saying: "Die and be d—d, die and be d—d."—(An old print.)

Miscellany.

Modern Medicine says: "A late English medical journal reports that Mr. Waterhouse has recently succeeded in constructing a new heel-bone from the collar-bone of a sheep! This is certainly a most astonishing achievement, as it includes not only the constructing of the heel-bone for the man, but a collar-bone for the sheep also. Our English cousins, with their superior advantages for medical learning, ought certainly to know that the sheep has no collar-bone." This reminds us of that anomalous anatomical proverb which says of a tardy person: "He has three hands, a right, a left and a little behind hand."

A new method of wound treatment has been suggested by Salzmann, it consisting in application of protecting capsules of celluloid, made of a size and shape corresponding to different portions of the body. They are transparent, prevent pressure upon the wound, keep it clean and act as a warm, moist dressing. When applied securely by means of good, adhesive plaster, they are said to make every other form of dressing superfluous.

A Novel Remedy for Drunkenness.

An American journal contains a new remedy, proposed by Dr. Brincil of Philadelphia, for curing habits of intemperance. The first experiment he tried was on a man who was in the habit of drinking two quarts of rum daily, besides four quarts of porter. The man's wife was advised to put a dram of oil of vitrol in a pint of rum, which was done, and it produced a species of nausea and disgust at liquor. Having symptoms of mania é potu, opium was administered to him with success. On the recurrence of his desire for liquor recourse was again had to the acid, which at length effectually prevented every relish for spirits in future. Dr. Brincil adopted the same system in several other instances of habitual drunkards with equal effect. He also found that tincture of ipecacuanha produced similar effects.—From an old London newspaper.

An Advance in Roentgen's Photography.

Professor John MacIntyre writes Nature that he has been pursuing the study of photography of the soft tissues in the living subject, and made attempts to see shadows thereof in the fluorescent screen. Success attended his efforts as regards the neck, the tongue, hyoid bone, larynx, etc., and recently he has been able to photograph and see shadows of the cardiac area. In one photograph taken, the diaphragm was clearly indicated. The pyriform shape of the cardiac area is well shown, the base downwards, apex upwards, and the right and left borders of the photograph showing the relationship of the spine and ribs.—The Medical Age.

Silkworm Gut Sutures Left Two Years in a Cervix.

Dr. H. J. Garrigues, writing to the Clinical Recorder, says:

"I was recently consulted by a patient because she had not had her menstruation for three months. In making a vaginal examination, I found a pregnant uterus of corresponding size, but on either side of the cervix were felt two silkworm gut sutures. They had been forgotten there two years before when a trachelorrhaphy and colpoperineorrhaphy had been performed on her. She had never been inconvenienced by them. They were easily removed, and were found as fresh as when they were inserted. They had not given rise to suppuration, and illustrate the excellence of this material.

"On another occasion I removed a silk suture from the cervix, where it had stayed for six months, but that had given rise to a profuse suppuration, which brought the patient to seek advice."

Lung Surgery.

Péan (Presse Médical, October 23, 1895), in concluding a lengthy address on the surgery of the lung, gave the following results of his personal experience, and of his study of the numerous published reports on this subject:

1. The surgery of the lung, like that of the viscera, has of late made much progress, thanks to the perfection of our anatomical knowledge, and to the improvement in operative procedures for the arrest of hemorrhage.

2. Equally favorable conditions for surgical intervention do not occur in all affections of the lungs.

3. Wounds caused by contusing bodies, by stabbing and cutting instruments, and by gunshot projectiles of small and medium caliber usually heal well without causing suppuration or troublesome reaction.

4. The danger which results from such injuries is due, not to the injury of the lung-structure itself, but rather to the multiplicity and extent of the wounds and to the lesions of important neighboring parts.

5. The surgeon should not intervene too hastily in these injuries, either by making a simple exploration, or by attempting to extract a projectile which can be seen near the surface.

6. Large projectiles, such as fragments of shell, give rise, especially on the field of battle, to disorders which in a large majority of instances are so severe that it is impossible for

the surgeon to ward off danger, even by suturing the visceral and parietal layers of the pleura.

7. A certain number of spontaneous affections of the lung may be successfully dealt with if the surgeon be careful to make a study of symptoms and indications, and a carêful selection of his operative measures.

8. Simple and gangrenous abscesses, when they are of limited extent, show no tendency to cure, and threaten life, are amenable to surgical treatment.

9. In such cases the results are almost always favorable.

10. It is advisable to open, scrape, drain and even cauterize tuberculous abscesses of the lung, when these cause severe pain or have resulted in fistula, or contracted extensive adhesions with the pleura.

11. It is often useful in these cases to associate with such treatment partial resection of the ribs.

12. No benefit is likely to result from excision of fragments of the lung surrounding the tuberculous cavities, as the tubercle bacilli have already spread beyond the apparent limit of the disease.

13. It is advisable to open hydatid cysts of the lung, the surgeon taking advantage of adhesions when such exist, and establishing still further adhesions when those existing are not of sufficient extent, in order to be able to wash out the cavity with antiseptic solutions.

14. Solid tumors of the lung should be extirpated when superficial; the occasions, however, for this treatment must be rare, as such growths are almost always secondary.

Treatment of Aseptic Wounds Without Bandages or Dressings.

In the British Medical Journal of February 1, 1896, is a paper by Mr. Mackenzie with the above title. It is summarized in a recent issue of the Annals of Surgery as follows:

The requisites to promote healing of wounds are:

1. To maintain the parts at rest and the raw surfaces that are intended to unite together in close and constant apposition.

2. To prevent contamination of the wound from external sources.

3. To get rid of excessive discharges.

Mackenzie claims that the dressings and bandages usually employed to obtain these ends are expensive, cumbersome, and often insufficient. He closes all wounds, when the incision is made through the skin, by rows of buried sutures of fine catgut and a continuous catgut suture of the skin. A carbolized compress is kept in position a few minutes to absorb any oozing. The surface is then lightly sponged with alcohol and painted with a layer of celloidin (celloidin one part, absolute alcohol and sulphuric ether each four parts). No other dressing is applied. If the wound has been carefully sutured and is aseptic, there is no discharge. If anything like a stitch abscess occurs, the celloidin can be pricked at the affected point and the drop of pus allowed to escape without disturbing the rest of the suture line. In this way the writer has treated cases of hernia, excision of the breast, amputations of the limbs—in fact, any wound which does not involve mucous membrane. The method especially commends itself in wounds of the face, many of which are perfectly held by the celloidin and require no suture.

A Natural Query.

A Detroit youngster, in his sixth year, had for several months, with all the insistence of a youth of his age, pestered his parents for a bicycle. The other evening his father, in response to the usual plea, suggested it might be well to pray for the desired wheel. Accordingly, at bedtime the youngster's petition was put up, and the following morning, full of faith, he descended to the hall, to view the treasure expected to be there. Sure enough he found a spick-span, brand-new—tricycle!

A look of utter disgust overspread Eddie's countenance. "O God," he said, "don't you know the difference between a bicycle and a tricycle?"—Medical Age.

Report of Standing Committee of the Section of Railway Surgery of the New York Medico-Legal Society on "Car Sanitation and the Railway Transportation of Cases of Contagious and Infectious Diseases."

[*From Advance Sheets of Medico-Legal Journal.*]

To the Section on Railway Surgery of the Medico-Legal Society of New York.

Gentlemen:—The standing committee authorized at the November, 1895, meeting—joint session—to report on the question of car sanitation, and especially on the transportation of people, sick or afflicted with infectious or contagious diseases, submit the following report:

Transportation of the sick is necessary.

It is the duty, and to the interest of all, that railway managers consider how best to meet the exigencies of such service, and how best to protect all who travel on railways, from the danger of infection and contagion.

In this report we will first consider tuberculosis, better known as consumption, which is a dangerous, infectious, communicable disease, the spread of which may be largely prevented by isolation, and by simple and easy means of cleanliness on the part of those

afflicted, and those having care of them. It is transmitted in the vast majority of cases, from the sick to the healthy, by means of the sputum or expectoration of those afflicted with the disease.

Apartments, berths, compartments in coaches, etc., which have been occupied by a consumptive, or by a person sick with any contagious disease, should not be occupied by others, until they have been disinfected.

Sick people travel under different circumstances:

1. Some take passage in an apparently healthy state, and after a few hours experience the first symptoms of infection.

2. Others suffering from an acute transmissible disease, hastily undertake a short journey, in order to reach their family physicians.

3. Others having acquired a chronic disease travel with a theraputic object, in search of a different climate, of a bathing station, etc.

4. The unfortunate incurables often return to die in their own homes, or among their own people.

The sleeping car is considered by all to be the point of greatest danger. Fellow passengers and employes can and should be protected. The question of car sanitation is timely, very important, and of deep interest to the traveling public of the entire world. It is also a very delicate question indeed, for the officials of our railways to consider and settle, for it affects the personal liberty of passengers.

Your committee believes, however, that when our officials fully understand the dangers arising from the present custom of transportation of people sick with contagious diseases, that they will be found ready and willing to meet us in discussion, to receive instructions, and if they can see their way clear, to adopt proper and up-to-date means of prevention.

Your committee also believes that car sanitation is an element soon to be advertised by railways, and in proportion to its perfection, will they receive profit and commendation.

Preventative measures are, in the judgment of your committee, the best means of averting the dangers we are asked to consider. We therefore make the following recommendations:

I. Prevention.—1. Education of the public through the daily press. 2. Legislation, state and national. 3. Isolation of passengers. 4. Disinfection of berths and compartments. 5. A conference between railway men and railway surgeons.

George Chaffe, M. D., Ch'rm., Surgeon; Ex-President N. Y. State Association Railway Surgeons, Brooklyn, N. Y.

Clark Bell, Esq., Vice-Chairman and Secretary Section Medico-Legal Surgery, New York City; Frank H. Caldwell, M. D., Chief Surgeon Plant System of Railways, Sanford, Florida; Granville P. Conn, M. D., Chief Surgeon; Ex-Chairman Section Medico-Legal Surgery; Medico-Legal Society, Concord, N. H.,; B. P. Downs, Surgeon N. Y. & N. H. R. R.; Secretary Medico-Legal Congress, Bridgeport, Conn.; R. Sayre Harden, M. D., Surgeon; Ex-President N. Y. State Association of Railway Surgeons, Waverly, N. Y.; J. B. Murdock, M. D., Chief Surgeon; Ex-President National Association Railway Surgeons; Vice-Chairman Section Medico-Legal Surgery, Pittsburg, Pa.; R. S. Parkhill, M. D., Surgeon; President N. Y. State Association Railway Surgeons, Hornellsville, N. Y.; R. Harvey Reed, M. D., Chief Surgeon; Editor American Academy of Railway Surgeons; Editor Columbus Medical Journal, Columbus, Ohio.

Dated April 15, 1896.

A tongue—Congreve said he knew a lady that loved to talk so incessantly she would not give an echo fair play; she had that everlasting rotation of tongue that an echo must wait till she died before it could catch her last words.

While a speaker was describing the nature of gas a blue stocking lady clamorously inquired of a gentleman near her, "what the speaker meant by oxy-gin and hydro-gin, what was the difference?" "Very little, madame," said he, "by oxy-gin we mean pure gin, and by hydro-gin we mean gin and water."

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate; situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms: stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address "BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

THE Railway Surgeon

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THE RESTORATION OF NERVES AFTER INJURY.

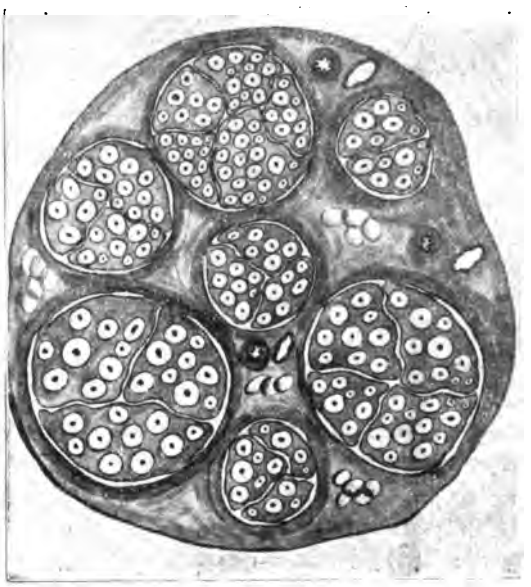
BY A. H. LEVINGS, M. D., OF MILWAUKEE.

Some four months since, when your distinguished president did me the honor to invite me to present a paper to this representative body of railway surgeons, I selected as my subject, and partly at his suggestion, "The Restoration of Nerves After Injury." It was understood that I should work out the process experimentally, so far as my ability and the time at my command would permit. One thing, at least, I have demonstrated to my satisfaction, namely, that the period has been too short, and the time at my disposal too limited to do anything like justice to the subject. It would require at least one year of patient, earnest work to prove or disprove any considerable number of the many theories of nerve degeneration and regeneration, as well as the best method of restoring the continuity of a nerve after division or resection. In my experimental work I have confined myself to the sciatic nerve, because it is accessible, of sufficient size to be easily manipulated, and the paralysis following its division is pronounced and readily recognized. Thirty-three experiments were made, thirteen on dogs, fifteen on rabbits and five on cats.

ANATOMICAL DIVISION AND MICROSCOPICAL STUDY OF NERVES.

The nerves are divided into two great systems, the sympathetic and cerebro spinal or motor nerves. With the sympathetic system surgery has little to do outside of the ganglia in the neck and those connected with the fifth cranial nerve. If we study microscopically a small motor nerve, as the sciatic in the rabbit, we find that it is made up of small nerve fibers, each fiber consisting of an axis cylinder, a

white substance which surrounds the axis cylinder, and a thin membrane which encloses the white substance. The axis cylinder is the essential, the transmitting portion of the nerve, and constitutes about one-third to one-half of the nerve fiber In the fresh state it is transparent, but after post-mortem changes, under a high power, it shows fine longitudinal



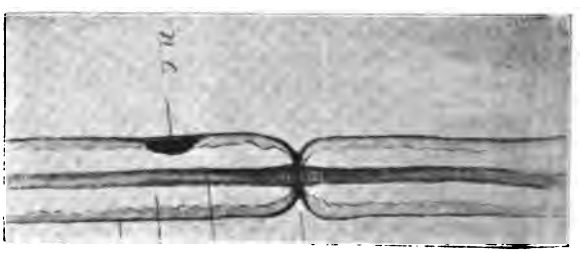
NO. 1. TRANSVERSE SECTION OF NORMAL NERVE.

striations. The white substance of Schwann is apparently made up of fluid fat, and acts as an insulator to the axis cylinder; the white substance of Schwann is interrupted at regular intervals by the nodes of Ranvier. The neurilemma which surrounds and holds in place the white substance of Schwann is composed of nucleated endothelial cells, and, like the axis cylinders, suffers no interruption at the nodes of Ranvier. If we study the formation of nerve cords from nerve fibers, we find that a number of fibers are united into a bundle by connective tissue called the endoneurium. A number of these primary bundles are enclosed by a laminated sheath containing lymph spaces and called the perineurium. Secondary bundles are finally grouped into nerve cords surrounded by connective tissue, the epineurium.

DEGENERATION OF MOTOR NERVE FIBERS AFTER INJURY OR DIVISION.

It has come to be one of the fundamental laws of the physiology and pathology of the nervous system that a nerve fiber, cut off from its trophic center, degenerates throughout its entire extent. This fact was first demonstrated by Nasse in 1839 and was afterward confirmed by Waller, Budge, Bruck and others. The degenerative process consists essentially in a breaking up of the myeline or white substance of Schwann into drops of fat. The axis cylinders also break up into fragments and both disappear by absorption. This degenerative process is much more pronounced in that portion of a motor nerve distal to the place of section, while the proximal portion, which still retains its connection to the so-called trophic centers, undergoes but little degenerative change. The inception of this process may be seen as early as the fifth day, and is frequently complete by the tenth or fourteenth day.

The tissue normally innervated by a divided nerve also undergoes degenerative changes; the surface temperature falls from 2 to 7 degrees F. and the part feels cold; in the skin there are burning, pricking pains, formication, increase of sweat or at times abnormal dryness, œdema, redness or abnormal pallor. Such cutaneous affections as eczema, herpes, zoster, pemphigus and echthyma may appear, or disturbances of nutrition with the formation of eschars, ulcerations or gangrene. Inflammatory and trophic disturbances may also take place in the periosteum and bones. In the joints serous effusions may occur, taking the form of chronic hydrarthrosis or plastic exudates with organization producing ankylosis, may appear. These processes in the bones and joints occur only as final results in unhealed nerves. Immediately after division of

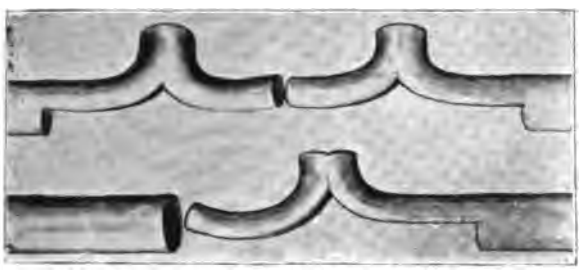


NO. 2. NERVE FIBER.

a motor nerve, its excitability to external chemical, electrical and mechanical stimuli is increased, while its normal function is suspended. After degeneration has become well advanced, the excitability disappears.

Clinical experience and experimental ob-

servation would seem to demonstrate that if a nerve is immediately sutured after division or in cases of excision, if the interval is immediately bridged over with some suitable porous material, complete degeneration of the entire peripheral portion does not take place. The re-establishment of sensory and motor function, within a few hours or at most days, in a



NO. 3. FLAP METHOD.

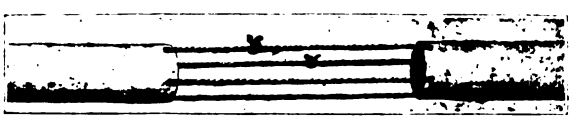
considerable number of these cases would seem to prove this. Function is too quickly restored for the regeneration of a completely degenerated nerve. If the sciatic nerve of a dog be divided, the ends will be immediately separated by about an inch, in consequence of the elasticity and contractility of the nerve tissue. If the wound is closed without any attempt being made to unite the divided nerve, and the parts be examined at the end of two weeks, both ends of the nerve will be found bulbous, the proximal bulb being the larger. The distal portion of the nerve will have lost its pearl-like, glistening appearance and will appear dull and sodden, and will have shrunken at least one-third in size. If the nerve be immediately sutured after division, the macroscopic degenerative appearances are much less pronounced, the nerve retaining practically its normal appearance.

REGENERATION OF A DEGENERATED NERVE.

This depends almost wholly upon the approximation or indirect connection of the two ends of the divided nerve. Regeneration always begins in the proximal portion of the nerve, and probably depends upon a strong forward growth of the axis cylinders, which are capable of being projected across a very considerable interval to the distal portion of the nerve if there be a scaffolding of loose tissue to direct them. Reaching the distal portion of the nerve the axis cylinders are directed by the empty nerve sheaths and connective tissue spaces to the very extremity of the nerve, ending in muscle, skin or gland. At first many of the axis cylinders are naked, but later become surrounded by a myeline sheath. A few investigators hold that nerve regeneration is brought about by a proliferation of the nucleated endothelial cells of the neurilemma, these cells sending out strong offshoots, which become the new axis cylinders. They also hold that the process of regeneration is carried on in both extremities of the divided nerve, though to a less extent in the distal.

SPONTANEOUS REGENERATION OF NERVES WITHOUT SUTURE.

Clinical experience has demonstrated the possibility of the restoration of the conductivity of nerves after division without suture. The experience of Keen, Weir Mitchell, Morehous, Notta and others, has proven that this condition may occur in exceptional cases. Notta saw an instance of spontaneous regeneration within six months after division of all the nerves of the arm. Tiedmann, in August, 1827, exposed the brachial plexus of a dog in the axilla and divided each nerve, excising from them a piece two to two and a half centimeters long. Complete paralysis of sensation and motion followed, but in the course of a year and a half both sensation and motion returned. Six months after the return of function, the dog was killed and the nerves found united by medullated nerve fibers. Schiff excised five centimeters of the Vagus nerve in a dog, and after several months demonstrated the restoration of the conductivity of the nerve. Langenbeck and Hueter observed restoration of the conductivity after



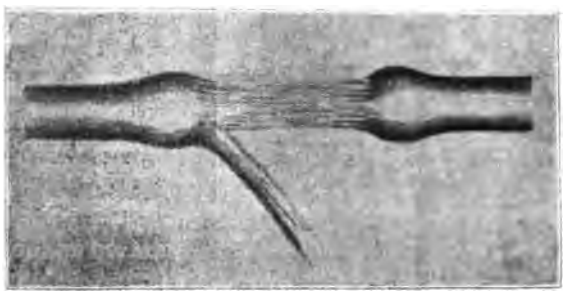
NO. 4. BRIDGE OF SILK.

laceration of the brachial plexus in a Prussian officer, who was wounded by a cannon ball in the storming of the Düppeler redoubt on April 18, 1864. In September of the same year the arm was completely paralyzed. After one year and a half the function of the arm was so far restored that the patient became fit for active duty and served as an officer in the campaign of 1866 He was killed

while battalion commander in the battle of Worth. These recoveries, however, are extremely rare and do not invalidate the rule, that irreparable paralysis is always to be expected after division of a nerve without suture.

THE TIME AND THE OPERATIVE METHODS FOR RESTORING THE CONTINUITY OF NERVES AFTER INJURY OR RESECTION.

In point of time the suturing of a nerve has been divided into primary, or that done imme-



NO. 5. MICROSCOPIC APPEARANCE OF SPECIMEN WHERE DECALCIFIED BONE WAS USED.

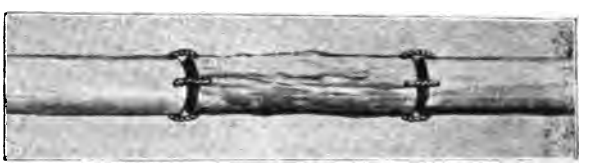
diately after the injury, and secondary, or that done at some subsequent period. Primary suture was first practiced by Baudens in 1836 with negative results. Nélaton and Langier repeated the operation in 1863 and 1864, respectively. Fine silk was used, the suture being brought out of the wound and left to come away subsequently by suppuration. Primary suture of a divided nerve should always be practiced, if possible, before degenerative changes have taken place in the distal portion of the nerve. Catgut is the most suitable suture material, if there is no undue tension upon the nerve ends; otherwise, fine silk may be used. The indispensable requisites for success are, first, that the nerve ends be brought evenly and squarely together, without any folding or turning in of the ends; second, that they be maintained in perfect apposition by suture, and, third, that the operation be perfectly aseptic. The turning in or folding of the nerve ends will lead the young axis cylinders off into the adjacent muscle (should they form) instead of into the distal portion of the nerve The occurrence of suppuration in the wound will delay or prevent union, or destroy it if it has already occurred.

The results of primary suture of nerves are surprisingly good, function, as a rule, being restored in from 7 to 21 days A surgeon may undertake the primary suturing of a divided nerve, if he do it properly and aseptically, with almost the same degree of confidence that he would set a broken bone or do any one of the ordinary operations of surgery.

Secondary suture of a divided nerve was first performed by Nélaton in 1865. The results in secondary suture, though longer delayed and not so satisfactory as in primary suture, in consequence of the degenerative changes which have taken place, have nevertheless been excellent in about 66 per cent of the reported cases. I am able to add one successful case to those already recorded.

A boy aged 17 came to me in July, 1893, ten months after suffering a severe injury to his right arm by having it drawn forcibly in between a heavy, rapidly moving belt and its pulley. Although the skin was not broken, the arm was severely crushed, and immediately after the injury showed paralysis of the muscles supplied by the musculo-spinal nerve. When the patient came under my care the loss of function was absolute. The bulbous upper extremity of the nerve was easily felt two inches above the elbow. The nerve was cut down upon and the extremities found nearly two inches apart. The lower portion of the nerve was much atrophied; the end was freshened, the upper bulb cut away, and after flexing the forearm, the ends were brought together with fine silk sutures. Commencing restoration of function was noticeable in six weeks, and at the end of seven months was very satisfactory.

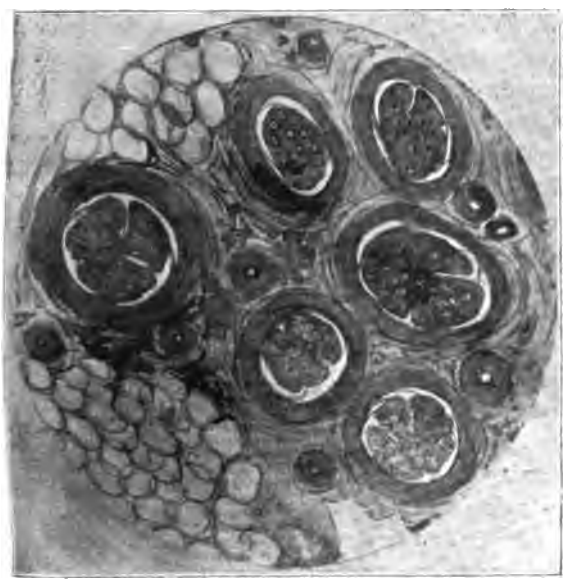
If the ends of a divided nerve cannot be ap-



NO. 6. BRIDGE OF MUSCLE.

proximated in consequence, either of a portion of the nerve having been resected or a loss of continuity by injury having occurred, one of various methods may be resorted to. Leterant proposed and practiced the flap method, splitting and turning down one-half of the nerve to bridge the gap The results of this operation, both clinically and experi-

mentally, have not been encouraging. In three dogs in which I resected one inch and a half of the sciatic and turned down a flap from the proximal portion to bridge the defect, there was failure of function in one after three months; in the second there was partial restoration of function after two months; in the



NO. 7. TRANSVERSE SECTION THROUGH REGENERATED NERVE IN A BRIDGE OF MUSCLE. SPECIMEN TAKEN ON THE TWENTY-FIRST DAY.

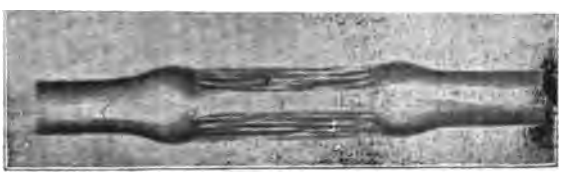
third, function was restored after 35 days. The reasons for these frequent failures in the flap method are obvious. The portion of nerve turned down as a flap does not remain vitalized, but degenerates. The degenerated flap, having its connection with the side instead of with the end of the nerve, is illy suited to lead the shooting axis cylinders to the distal end. It would probably lead to more satisfactory results if the flap could be turned up from below. The method does great injury to the nerve, is more difficult of technique than many others, requires exposure of a greater portion of the nerve, and can only be practiced on nerves of considerable size. It has but a narrow range of applicability, and the results will often be disappointing.

TRANSPLANTATION OF A NERVE FROM ONE OF THE LOWER ANIMALS.

This operation has been done by Gluck, Kaufman, Tillmanns, Ward, Moullin, Robson, Atkinson, Landerer and others. On March 1 I resected one inch and a half of the sciatic nerve of a dog and transplanted the sciatic nerve from a rabbit, using silk sutures. On April 19, fifty days after the operation, there was still complete failure of function, and the dog was killed. The transplanted portion of nerve had been absorbed, both ends of the nerve in the dog were bulbous, a condition which prevails where there is failure of restoration of function. The interval between the nerve ends was bridged over with a small amount of cicatrical tissue. The operation, though a failure in this case, is certainly a good one, and is sure to be successful in a large number of cases. The interval can be bridged accurately, and, although the transplanted nerve will degenerate, it will afford an excellent scaffolding in which the growing axis cylinders will be led to the distal end of the nerve. In opposition to it, it may be said that it requires a live animal, necessitates two operations and an unnecessary amount of technique Atkinson, in excising the hip joint, cut out by accident one inch of the sciatic nerve. The excised portion was sutured in position with subsequent restoration of sensation. Landerer engrafted a piece of the sciatic from a rabbit into the radial nerve of a woman to bridge a gap three and a half centimeters long. Sensation returned in three weeks and active motion was possible in ten weeks.

BRIDGING OVER THE DEFECT WITH STRANDS OF CATGUT OR SILK.

This method was proposed by Assaky, who used catgut. Experimentation has shown that in order to get subsequent restoration of function in a resected nerve, provided the ends are not too widely separated, it is necessary to



NO. 8. MICROSCOPIC VIEW OF REGENERATED NERVE IN MUSCLE.

bridge the interval with some porous material which shall act as a scaffolding, through which the young nerve fibers may easily penetrate and which will lead them to the distal end of the nerve. In my experimental work this method was practiced eight times with excellent re-

sults, function being completely restored in one case after resection of one inch and a half of the sciatic and a bridge of six strands of fine silk in twelve days. The longest time required where there was complete restoration of function was forty-eight days. In one cat there is now failure of function after thirty-one days. This method of bridging the defect in nerves is, in my opinion, one of the best yet devised and a method that will give excellent results in practice.

THE USE OF DECALCIFIED BONE.

In ten experiments upon dogs, Van Lair resected a portion of the sciatic and stitched the nerve ends to the ends of decalcified bone. Van Lair thought that the defect in the nerve might be bridged over by the young nerve fibers growing from the proximal end and that the medullary and haversian canals in the bone would afford an excellent passage and conduct the young nerve tubes to the distal portion of the nerve. I resorted to a slight modification of Van Lair's method in two experiments. After resecting an inch and a half of the sciatic, I ran four strands of fine silk from one end of the nerve to the other, bringing the nerve ends inside of the medullary canal of the decalcified bone. In one dog function was restored in fifty-one days. In the other there was complete failure after fifty-four days. The technique in this operation is more complicated than by the use simply of strands of silk or catgut, and I believe it has no advantages. The specimens in both of my experiments showed that the decalcified bone had been absorbed and in one, macroscopically, it was to be seen that a very considerable number of the new nerve fibers had not been conducted to the distal extremity of the nerve, but ran off into the adjacent muscle, probably led there by growing through some of the haversian canals.

ADJACENT MUSCLE USED FOR BRIDGING THE DEFECT IN RESECTED NERVES.

While making these experiments and seeking for some suitable material with which to bridge the defect in a resected nerve, it occurred to me that a portion of the adjacent muscle might afford a suitable material, as it had longitudinal fibers, was sufficiently porous, possessed a sufficient degree of firmness and was always at hand. Resections of an inch and a half to two inches of the sciatic nerve were made in two dogs, four cats and seven rabbits, and the interval bridged with muscle. In the two dogs complete restoration of function occurred, in one in twelve days and in the other in fifteen days. Unfortunately, two of the cats and three of the rabbits died, either on the table or within a few days and before restoration of function was possible. Of the four rabbits that lived, function was restored in two in twenty days, in one in thirty days, and in the remaining one in thirty-six days. In the two cats that lived function was restored in one in twenty-eight days and in the other in thirty-one days. There was not a failure in a single instance. The macroscopical appearances when the specimens were removed were most interesting. In a few cases the muscle had undergone degeneration in whole or in part, presumably from too large a piece of muscle being used. In those cases where the quickest and best results were attained, the muscle had retained its vitality and the fibers appeared as fresh and healthy as those adjacent to it, and what was most surprising was the strong and firm bond of union which the muscle had maintained between the nerve ends. This was quite in contrast to the union which has occurred where silk or catgut had been used. In these cases there was but a slight amount of connective tissue bridging the interval between the nerve ends. In this exceedingly frail tissue the nerve fibers ran. In the most successful experiments with muscle, a strong band of new nerve fibers could be seen running through the muscle and connecting the nerve ends. All of the animals in which the muscle had degenerated were rabbits, in which animal the muscle fibers are very small, closely set, and have a low state of vitality, as does the animal.

For the success of this operation it is necessary that the piece of muscle taken should correspond in direction with the fibers and should be small, not larger than a small lead pencil. The fascia of the muscle must be preserved, as this gives it greater firmness. The ends are cut squarely across and united evenly by two sutures to the nerve, one perpendicular, the other transverse. The deep part of the wound should be closed with catgut sutures, bringing the muscles together about the piece inserted. The skin is united with silkworm

gut. In my experience, the bridge of muscle has given the quickest, the most satisfactory and the best results. The method is easy of execution, the material always at hand, the union strong and firm, and the results surprisingly good. I offer this method to you with confidence, and believe it will prove to be the best of all methods yet devised for the restoration of continuity in nerves.

DISCUSSION OF DR. LEVING'S PAPER.

President Murphy: I congratulate the association and myself on having Dr. Levings accept an invitation to come to this meeting to read a paper. This is certainly an epoch-making paper in the repair of nerves. It starts a new field and puts us again in advance of our competitors and justifies what I claimed in my opening address, that this association would produce as many advanced ideas as any medical society in America or in the world. (Applause.) I will ask Dr. Outten to open the discussion.

Dr. W. B. Outten: After having listened attentively to the valuable paper of Dr. Levings, I find there is very little for me to say, except to congratulate the association upon having heard this important contribution to our knowledge of the restoration of nerves after injury. The doctor, by experiment and research, has demonstrated the utility of his procedure and claims to have accomplished results never before realized, and these results he has laid before us. He has led us along a new path. This is the kind of work that makes America; it is the kind of work that makes the West, and forces me to say that a man need not make a pilgrimage to the East in order to get knowledge; neither has he to go to Europe, to France, or to Germany for this purpose. I think the time is not far distant when the Germans and the French will have to plant their feet on American soil and come to the wild and woolly West in order to obtain their advanced knowledge. This is certainly a magnificent paper, and I am glad to have heard it. It shows us the talent we have in our native land, and makes us appreciate the fact, that when opportunity comes, we have never yet failed to find the proper man.

On motion of Dr. Thorn, a rising vote of thanks was extended to Dr. Levings for his valuable contribution.

WHEN TO AMPUTATE—BRIEF RULES FORMULATED.*

By S. Birdsall, M. D., Susquehanna, Pa.

So much has been written in the past few years regarding this important subject, and by experienced surgeons, too, that it may seem superfluous, and I might say presumptuous, for me to offer anything on this topic at this time, but I write with a view to assisting the younger and more inexperienced surgeons to decide this often difficult and perplexing problem, and not to instruct those whose long experience enables them to decide promptly and correctly without any apparent process of reasoning. I will endeavor to do this by presenting the subject catechetically.

If two brief questions can be answered affirmatively the surgeon need never be in doubt. I might also say, need never wait.

First: Is an amputation necessary? While this is the first question to be decided, and of paramount importance, it is wholly unnecessary for me to discuss the conditions rendering amputations necessary, except to say, that in the practice of railway surgery, a part or the whole of an extremity is often so completely crushed as to leave no doubt whatever as to the necessity of amputation. It is only in exceptional cases that any great difficulty would be encountered, in deciding this first question. If we are uncertain or unable, from any circumstance, to decide, we have only one thing to do, that is, to wait. We should never sacrifice any portion of the body when there is reasonable ground for hope of restoration to a fair degree of usefulness. It is unnecessary for me to dwell upon this part of the subject, for the reason that so much has been said of late regarding it. It has been thoroughly considered at various times in different societies by experienced and competent surgeons.

Let us suppose that we have decided the first question affirmatively, and that an amputation is necessary, we will then proceed to consider the second question, which is:

Will my patient survive if I proceed now? So little has been said regarding prognosis in the case of severe injuries, at least, as bear-

* Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, May 1, 1896.

ing upon the ability of the patient to survive an important operation, rendered necessary by traumatism, that a few suggestions upon this point may not be inappropriate. In deciding this question the surgeon will have ample opportunity for the exercise of his best judgment, even if aided by considerable practical experience and thorough professional knowledge. He will still feel the need of the opinion and advice of those more experienced than himself. Any general principles, rules, suggestions, or opinions from those having the widest range of actual experience would no doubt be read with the greatest interest. An eminent authority in gynæcology states that skill in the diagnosis of abdominal tumors can only be attained by repeated examinations and many failures. The same is true, to a great extent, as to acquiring skill in deciding the question we are now considering. By availing ourselves of the knowledge gained from the experience of others, we should aim to make the failures as few as possible. Whether an injured patient can survive an operation will depend largely upon the following conditions:

1st. The severity of the injury. 2d. The degree of shock. 3rd. The amount of blood already lost. 4th. The habits of the individual, and 5th, his constitution.

1st. As to the severity of the injury, care is necessary in the examination of an injured patient in order to ascertain the extent of injury, especially in railway cases. So deeply has this been impressed upon my mind, that I invariably search for multiple injuries. For example, a patient has a crushed lower extremity. If able to speak, I would not fail to inquire: "Do you think you are injured elsewhere?" We may also find fractured ribs and an injured lung or other severe trauma complicating the case. Before deciding whether our patient will be able to survive an operation, we should be as certain as possible that we have ascertained the number and extent of the injuries present.

While it would be impossible, in a paper like this, to do more than offer a few suggestions that may aid in prognosis, we may safely say that, as a general rule, the average individual will survive the loss of a single extremity; any portion of the forearm or arm, even at the shoulder joint: any portion of the leg and also an amputation of the thigh; but as we advance above the middle third, the danger is immensely increased. To this rule there are, however, exceptions. Probably all experienced railroad surgeons have seen patients succumb when but one lower extremity was crushed. I can recall three such cases. There had been but little hemorrhage in either case and no operation was performed. One was a patient of my own, the others I saw in consultation. In the case of my patient the laceration of the integument was not extensive, but a large portion of the soft parts were pulpified. The external hemorrhage was slight, but considerable occurred subcutaneously and into the intermuscular spaces. The patient soon became pulseless and remained so until his death, thirteen hours later. Many cases are on record where slight injuries and slight operations have resulted fatally. It has been related that a man in a hospital, not a case of railroad injury, was being prepared for an operation. The surgeon drew his finger along the proposed line of incision to explain to the assistants and students present what he intended to do. The patient evidently thought he had commenced the operation and immediately died, apparently from shock. This illustrates how difficult it is to determine whether a patient will survive an operation. Some cannot endure a comparatively small operation, while others survive double, and in rare cases, even triple synchronous amputations. Where the injuries are multiple and severe it is, no doubt, better to be cautious, to wait and ascertain whether the patient is gaining or losing; to wait until we can answer affirmatively the question: Will my patient survive if I proceed with the operation now?

2nd. Shock is an important factor to be conisidered in deciding whether an injured patient will be able to survive an operation. The degree of shock is, to some extent, an index to the severity of the injury. If the shock is quite profound, it is absolutely necessary to wait for some degree of reaction. To wait for further reaction when the patient has a fair pulse is a fallacy. The force, frequency and volume of the pulse is the best guide as to the severity of shock. The continuance of some degree of shock, for a time, is to be expected in all severe injuries and should not deter the surgeon from proceeding with a necessary

operation. As to the influence of anæsthetics upon the condition called shock there is a difference of opinion. I will not attempt to discuss the subject here. Further investigation and observation are required to elucidate this point. The surgeon who believes that they relieve or diminish shock will be inclined to proceed earlier with his operation than the one who holds the opposite opinion.

3rd. The amount of blood lost at the time of injury, or before the arrival of a surgeon must necessarily have a marked influence on the condition of the patient. The chances of surviving a serious operation are diminished in proportion to the hemorrhage, but the loss of a moderate amount of blood is no contra-indication to an early operation. It is well known that contused wounds do not bleed freely. Most wounds in railway service are of this class. The amount of blood contained in a crushed extremity is, of course, lost. This alone would be sufficient to produce quite severe shock in some persons. The amount of hemorrhage can only be estimated approximately and must be described by such relative terms as slight, moderate, severe, profuse, etc. If the surgeon is quite certain that the hemorrhage has been severe, he should be cautious about proceeding at once with an operation. No fixed rule can be established, but due consideration should be given to the loss of vital fluid, in determining the question of prognosis.

4th. Habits. It has been said; "Happy is the man whose habits are his friends." This is true and, perhaps, never of more significance than when the individual has sustained a severe personal injury. It frequently happens that the railway surgeon meets his patient for the first time when called to render his assistance, and knows nothing of his habits. Careful inquiry will often fail to elicit the desired information. If, however, the marks of dissipation or syphilitic disease are plainly manifest, they should serve as notes of warning, indicating that the patient is in poor condition for an operation. Although these circumstances are unfavorable, they should not be allowed too much weight. Such patients are poor subjects upon which to practice conservative surgery. They are the very cases where it is important to proceed, with any required operation, as soon as the second question I have indicated can be answered in the affirmative. Any habits tending to impair vitality or lower the tone of the system are unfavorable for sustaining a serious operation.

5th. Constitution of the individual: Strength of constitution is not determined by the weight or stature, or even muscular strength, but by the vitality or powers of endurance. Previous acquaintance with the injured person will enable the surgeon to form a sufficiently accurate estimate of his patient's stamina or vitality; in other words, his constitution. Without such acquaintance, the surgeon should search for organic disease of all important organs, especially for renal disease. The person with weak constitution succumbs, while the one possessed of good powers of endurance survives an important operation. The importance of a correct opinion regarding the patient's constitution should be duly appreciated by the surgeon. Having intimated to our president that my paper would not exceed ten minutes, I must close, having but briefly indicated the chief points that should be given consideration in estimating the prospects of an injured patient surviving an important operation. Having decided that an operation is necessary and that it appears quite probable our patient will survive, if we proceed at once, there is but one thing for us to do, and that is to operate. I do not mean that we should be hasty and operate wherever we may. We should take what time is necessary to remove the patient to a suitable place and make suitable arrangements, but should not delay unnecessarily. With the conditions I have just indicated all complied with, I can imagine no cases to which the rules I have formulated do not apply.

It is a common saying: "There are exceptions to all rules," but I would urge you not to seek for exceptions. I am fully satisfied that it will be better for your patient and will save you much anxiety and mental strain, if, having decided that an amputation is required and that your patient will probably survive, you follow the advice suggested in this paper and proceed.

Order a purge for your brain; it will there be much better employed than upon your stomach.—Montaigne.

One asking a Lacedæmoniann, what had made him live so long, he made answer: "The ignorance of physic."—Montaigne.

A COMPLETE EMERGENCY OUTFIT.

By Arthur Dean Bevan, M. D., Chicago.

Professor of Anatomy at Rush Medical College; Professor of Surgery at the Women's Medical College; Surgeon to the Presbyterian, St. Luke's and St. Elizabeth's Hospitals.

The introduction of asepsis and antisepsis has so completely revolutionized the technique of operative surgery, that the general surgical operating cases formerly used are now practically worthless. Experience has taught us that, with proper preparation and proper precautions, aseptic surgery can be done as well in a farmer's kitchen as in the most modern operating room.

To accomplish such results, however, a surgical outfit is required which is so complete

that with the addition of water and a place to boil it, the surgeon has at his disposal everything necessary to perform an aseptic operation. The value of aseptic or antiseptic surgery has been so fully demonstrated that the operator who neglects to full carry out its essential principles is to be held negligent. This fact is generally admitted and yet how few surgeons possess and have ready for instant use a complete aseptic surgical outfit with which they can go at once to an emergency operation as fully prepared as a fire company is when it answers a fire alarm. Such an outfit must be recognized as a necessity by all men doing surgical work.

Many surgeons and instrument makers have pondered over the problem of devising the best complete emergency outfit, but as a rule their attempts have failed because of their efforts to make very small and compact cases, and as a result the outfit is incomplete and not suited to grave emergencies. After devoting some considerable time and thought to this subject I have devised an outfit so complete, that I could handle with it any emergency surgical case and practically all surgical operations, except such as litholopaxy, osteoclasis, etc., which require cumbersome instruments and which are of a nature requiring ample preparations.

A considerable experience with this outfit in cases of appendicitis, strangulated hernia, tracheotomy, mastoid disease and brain abscess, laparotomy for intestinal obstruction, ovarian cysts, stone in the bladder, retention demanding external urethrotomy amputations, osteomyelitis, fractures of skull and long bones, and in all general surgical cases performed outside of my hospital operating room, has taught me its great value. The outfit consists of two cases one containing the instruments, ligatures, sutures, anæsthetics and antiseptics; the other containing the dressings, sponges, bandages, aprons, towels, laparotomy pads, etc. The list of instruments is based upon a careful study of the instruments required for all the various operations described in one of our most complete text books on operative surgery. The list of dressings, bandages, etc., contains the essentials as found in our modern hospital operating rooms.

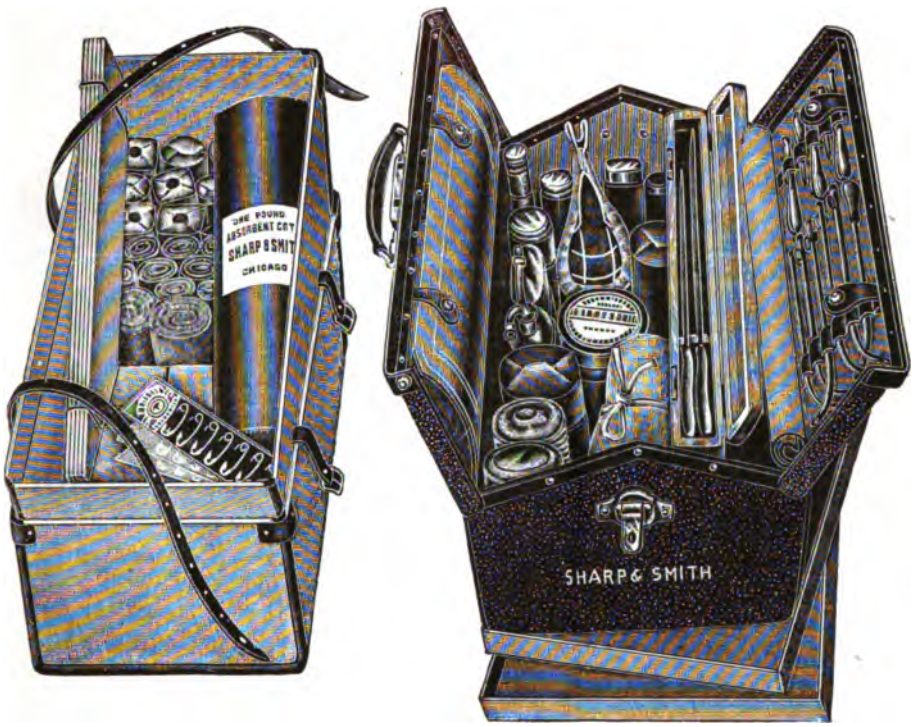
The outfit is very complete and rather expensive, but it contains practically all the instruments required by a general surgeon and in such shape that they are ready for instant use.

Not a little reputation may be gained for the surgeon by demonstrating to his patients and fellow practitioners that he is possessed of such a complete surgical outfit and is at all times prepared to meet any surgical emergency. But far above such considerations is the fact that such an outfit will enable the surgeon to give his patient the benefit of aseptic surgery under practically all circumstances, which means often the saving of life and suffering by the prevention of wound infection.

My experience in railway surgery, both as local and chief surgeon, has demonstrated to me that very few railroad surgeons are equipped as they should be with a complete emer-

gency outfit to do aseptic work. And yet the railway surgeons in each community are the men who do not only the railroad surgery, but the bulk of the general surgical work in the localities in which they live. Therefore I do not hesitate to emphasize in the columns of The Railway Surgeon the importance of being prepared with a complete outfit to do aseptic emergency surgery.

I would ask every man who reads this article to ask himself if he is so prepared, and I would urge every one who is not, to study the subject carefully and furnish himself with



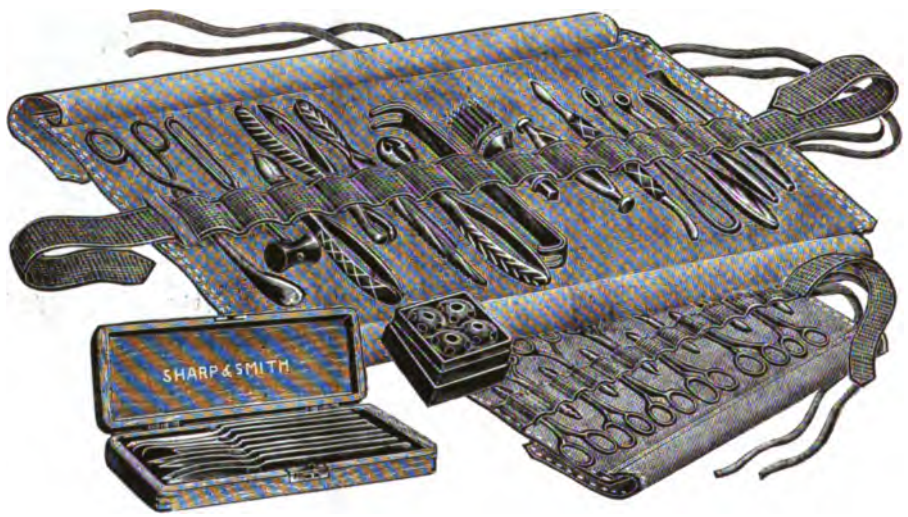
the necessary emergency outfit, not necessarily the one I outline below, but one which is equally complete and efficient.

The complete outfit consists of the following articles:

One emergency bag containing—
- 1 amputating knife for hip and thigh,
- 1 amputating knife for leg and arm,
- 6 minor operating knives,
- 1 Emmett's uterine needle holder,
- 12 Tait's artery forceps,
- 1 pair Collin's retractors,
- 2 plated probes,
- 2 grooved directors,
- 1 pair strong scissors,
- 1 pair curved scissors,
- 1 pair strong scissors, 6 inches,
- 1 pair of Liston's bone forceps,
- 1 Buck's lithotomy staff,
- 1 Rongeur forceps with spring,
- 1 pair Ferguson's bone holding forceps,
- 1 lead mallet,
- 1 Van Buren's bone chisel,
- 1 Van Buren's bone gouge.
- 1 mastoid chisel,
- 1 Galt's trephine,
- 1 metacarpal saw (movable back),
- 1 Kocher's director,
- 1 Sayre's periosteotome,
- 2 aneurism needles (metal handled),
- 3 hard rubber trachea tubes,
- 2 mouse tooth forceps,
- 1 Volkmann's curette,
- 1 pair of curved lithotomy forceps,
- 1 bone curette,
- 1 set Brainard's bone drills,
- 1 Smith & Sharp thermometer,
- 1 wooden case for two amputating knives,
- 1 wooden case for 8 smaller knives,
- 1 razor in case,
- 1 dozen assorted uterine needles,
- 1 dozen assorted surgeons' needles,
- 1 hypodermic syringe and tablets in an aluminum case.
- 1 set of Murphy's buttons,
- 1 Knight's stethescope,
- 1 razor strop,
- 1 Bouchard's syphon syringe,
- 1 ½-ounce hard rubber syringe,
- 1 papier maché catheter case,
- 6 dressing splints,
- 2 plated male catheters,

2 Nelaton's catheters (soft rubber),
3 filiform bougies,
2 Hunter's wedges,
1 bottle of assorted drainage tubes,
1 large aspirating syringe,
1 Esmarch's bandage,
1 eight-ounce metal cased bottle for chloroform,
1 four-ounce metal cased bottle for alcohol,
½ pound of ether,
1 bottle of sublimate tablets,
1 coil silkworm gut,
1 hard rubber iodoform duster,
2 bottles of assorted catgut,
1 bottle kangaroo tendons,
1 Esmarch's chloroform inhaler,
3 duck rolls for instruments,
1 Esmarch's tongue forceps.

One 16-inch telescope case containing—
6 plaster of Paris bandages, (3 inches by 6 yards),
1 can of sublimate gauze,
1 can borated gauze,
½ pound of absorbent cotton,
½ dozen gauze bandages (2 inches by 10 yards),
½ dozen cotton bandages (2 inches by 8 yards),
½ dozen flannel bandages (4 inches by 8 yards),
2 brass pulleys,
3 dozen safety-pins,
1 pure rubber bandage (2½ inches),
2 rolls adhesive plaster (1 and 2½ inches),
6 sterilized laparotomy pads,
8 sterilized towels,
1 can of iodoform gauze (10 per cent),
20 tubes of sterilized silk,
Needles for intestinal sutures,
2 aprons,
1 nail brush.
100 State street.



Notes of Societies.

American Association of Obstetricians and Gynecologists.

The ninth annual meeting of the American Association of Obstetricians and Gynecologists will be held at the Hotel Jefferson, Richmond, Va., Tuesday, Wednesday and Thursday, September 22, 23 and 24, 1896.

The proprietors of the Jefferson offer special rates to the Fellows of the association, their families and guests, as well as to any physicians who come to attend the meeting. It is confidently expected that the railways will offer transportation at a uniform rate of a fare and a third on the certificate plan to all in attendance. Let all obtain certificates from their local ticket agents, or from the nearest point where certificates are granted.

OUTLINE PROGRAMME.

The association will meet in executive session with closed doors on Tuesday, September 22, at 9:30 o'clock a. m., for the election of new Fellows. The open session for the reading of papers will begin at 10 o'clock a. m. Recess for luncheon at 1 o'clock p. m. Afternoon session at 3 o'clock p. m. An evening session will be held Tuesday at 8 o'clock.

Morning session will begin Wednesday at 9:30 o'clock for the reading of scientific papers. Recess at 1 o'clock. Afternoon session at 3 o'clock. Adjournment at 5 o'clock. Executive session at 6:30 o'clock. Annual dinner at 8 o'clock p. m.

Thursday morning the session will begin at 10 o'clock. Recess at 1 o'clock. Afternoon session at 3 o'clock. Final adjournment at

5 o'clock. A full attendance is specially requested at the final session.

PAPERS PROMISED.

Note.—No attempt is made to arrange papers in the order in which they are to be read. That will be done in the permanent programme.

1. "Principles and Progress in Gynecology." President's address. Joseph Price, Philadelphia.

2. "Vaginal Hysterectomy by the Clamp Method," Sherwood Dunn, Los Angeles.

3. "Further Experience With Appendicitis," A. Vander Veer, Albany.

4. "Relation of Malignant Disease of the Adnexa to Primary Invasion of the Uterus," A. P. Clarke, Cambridge.

5. "Treatment of Puerperal Septicemia," H. W. Longyear, Detroit.

6. "Treatment of Posterior Presentation of the Vertex," E. P. Bernardy, Philadelphia.

7. "Relation of local Visceral Disorders to the Delusions and Hallucinations of the Insane," W. P. Manton, Detroit.

8. "Differential Diagnosis of Hemhorrhage, Shock and Sepsis," Eugene Boise, Grand Rapids.

9. "Movable Kidney: Local and Remote Results," A .H. Cordier, Kansas City.

10. "Pathology and Indications for Active Surgical Treatment in Contusions of the Abdomen," W. G. Macdonald, Albany.

11. "Some Causes of Insanity in Women," George H. Rohé, Sykesville.

12. Subject to be announced, John Milton Duff, Pittsburg.

13. "Shall Hysterectomy be Performed in Inflammatory Diseases of the Appendages?" L. H. Dunning, Indianapolis.

14. Subject to be announced, Rufus B. Hall, Cincinnati.

15. Subject to be announced, Geo. Ben Johnston, Richmond.

16. "Dynamic Ileus: With Report of Cases," J. W. Long, Richmond.

17. "Faradic Treatment of Uterine Inertia and Subinvolution," Charles Stover, Amsterdam.

18. "A Plea for Absorbable Ligatures," H. E. Hayd, Buffalo.

19. "Treatment of the Stump," J. F. Baldwin, Columbus.

20. "Limitations in the Teachings of Obstetrics and Gynecology as Determined by State Medical Examining Boards," William Warren Potter, Buffalo.

21. Subject to be announced, Walter B. Chase, Brooklyn.

22. (a) The Philosophy of Drainage;" (b) "Treatment of the Pedicle in Hysterectomy or Hystero-myomectomy in the Abdominal Methods," Geo. F. Hulbert, St. Louis.

23. "Removal of the Uterine Appendages for Epilepsy and Insanity; A Plea for Its More General Adoption," D. Tod Gilliam, Columbus.

24. "Albuminuria of Pregnancy," A. Fr. Eklund, Stockholm.

25. Subject to be announced, Lawson Tait, Birmingham.

26. "Unnecessary and Unnatural Fixation of the Uterus and Its Results," James F. W. Ross, Toronto.

27. "Sarcoma of the Urethra," Charles A. L. Reed, Cincinnati.

28. "Appendicitis as a Complication in Suppurative Inflammation of the Uterine Appendages," L. S. McMurtry, Louisville.

29. "Gunshot Wounds of the Abdomen With the New Gun," J. D. Griffith, Kansas City.

30. Subject to be announced, Walter B. Dorsett, St. Louis.

31. Subject to be announced, W. E. B. Davis, Birmingham.

32. Subject to be announced, E. Arnold Praeger, Los Angeles.

33. "Tubo-ovarian Cysts, With Interesting Cases," A. Goldsphon, Chicago.

34. "Obstruction of the Bowels Following Abdominal Section," Geo. S. Peck, Youngstown.

35. Memorial of Dr. Hiram Corson, Traill Green, Easton.

Correspondence is pending concerning additional papers. All titles must be offered before August 25, when the permanent programme goes to press. The executive council directs attention to the following by-law:

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the secretary not later than one month before the first day of the meeting.

No paper shall be read before the association that has already been published or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the association.

Abstracts of all papers read should be furnished to the secretary at the meeting.

All papers read before the association shall become its sole property if accepted for publication; and the executive council may decline to publish any paper not handed to the secretary complete before the final adjournment of the annual meeting.

Dr. Geo. Ben Johnston, 407 E. Grace street, Richmond, Va., is chairman of the committee of arrangements, who should be addressed in regard to hotel accommodations and railway fares.

Joseph Price, President.
William Warren Potter, Secretary.

The Railway Surgeon

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Address all communications intended for the business department to THE RAILWAY SURGEON, *Monadnock Block, Chicago.*

"THE RESTORATION OF NERVES AFTER INJURY."

We are much pleased to be able to publish in this issue a most excellent paper by Professor A. H. Levings of Milwaukee, under the above title. We take an especial pride in this paper, for the reason that it describes a lot of valuable experimental work which was performed as a preparation for an original thesis to be read at the ninth annual meeting of the National Association of Railway Surgeons. Only those who have been engaged in such research can fully appreciate the amount of toil which Doctor Levings has performed in working out his experiments and making his modest report. We feel sure that all our friends who favored us with papers at the St. Louis meeting of the association will forgive us when we say that we regard this paper as the most valuable, from a purely scientific standpoint, of the papers which were read at that time. Dr. Levings is certainly to be congratulated upon his paper as a whole, and especially upon his successful establishment of the fact that the adjacent muscle affords the most suitable material for bridging the defect in resected nerves. We trust that his success in these experiments will encourage him in other practical work of similar nature, and have no doubt of his success in other fields of repairative surgery, should he choose to invade with his needle and scalpel.

"THE LIMITATIONS OF MODERN SURGERY."

We make no apology for reprinting in this issue the masterly article of Professor Senn, under the above title. We regard it as one of the soundest contributions to modern surgical literature, and coming from the pen of such an authority as Doctor Senn, it must do a great good especially at a time when every new graduate in medicine regards himself as a surgeon and when so many who occupying positions as teachers would fain make us feel that modern surgery scarce has any limitations. Few men have done as much for American surgery during the last decade as has Doctor Senn; perhaps no one man has ever done as much for American surgeons as he, and all honor is due him for his boldness and his honesty in taking the stand for rational conservatism which he has taken in the article above referred to.

THE SURGEON'S ARMAMENTARIUM.

Of course the prime essential in the practice of modern surgery is a man of sound judgment and individual skill. Scarcely second in importance, we would say, comes thorough scientific preparation. Certainly the third pre-requisite for success must be the equipment, for without the best tools even the most skilled workman cannot do his best.

We publish in other columns of this issue a paper by Professor Arthur Dean Bevan of Chicago, in which he describes a most complete, and some will say, elaborate outfit for emergency surgery, and suggests that every surgeon, and especially those engaged in railway work, prepare himself, as he has already done, to pick up his grips at a moment's notice and go to any case, no matter how serious, fully equipped with instruments, dressings, and other appliances. He makes the statement that with such an outfit any well trained surgeon may perform in a farmer's

kitchen as aseptic an operation as can be done in any modern hospital.

We also reprint in this issue a short paper by Doctor A. J. Ochsner, which originally appeared in The Corpuscle, in which he describes his method of performing a thoroughly aseptic operation amidst the filthiest surroundings.

We know from personal experience the comfort and feeling of security which comes from being ever ready, and cheerfully endorse the advice of Doctor Bevan that everyone who does surgical work should provide himself with a complete outfit suited to the work which he is called upon to perform, and always have it in order and within easy reach.

The outfit described in Doctor Bevan's article may seem to many surgeons altogether more elaborate than is necessary, but we feel sure that his paper will be a helpful guide to many, especially of the younger men, in the selection or preparation of an emergency outfit which will save them many annoyances and make their practical work much simpler and more successful.

We can also testify from familiarity with Doctor Ochsner's work and from personal experience, that it is possible to do aseptic work in the way and under the circumstances which he describes, but it requires constant care and thoughtfulness in regard to many details and a carefully prepared outfit which is constantly replenished and kept in order.

A PROPOSED MONUMENT TO PASTEUR.

The following letter and announcement have been received by the secretary of the National Association of Railway Surgeons. Dr. Wescott has made reply, stating that proper announcement would be made in the columns of The Railway Surgeon and that all subscriptions received would be duly forwarded to the committee at Washington. All remittances may be forwarded to Dr. Cassius D. Wescott, 31 Washington St., Chicago.

Washington, D. C., July 24, 1896.

Dear Sir:

There is enclosed herewith a circular concerning the international subscription for the erection, at Paris, of a monument to M. Pasteur. I have been requested to correspond with you and to secure the co-operation of your association, which our committee desires should be represented in this popular movement. Will you kindly act as an associate member of our committee, and collect and forward the subscriptions? The necessary blanks for this purpose are enclosed, and I trust you will inform me promptly of the action you take in this matter. Thanking you in advance for your interest and co-operation, I remain,

Very sincerely yours,

GEO. M. STERNBERG.

To the secretary National Association of Railway Surgeons:

ANNOUNCEMENT.

It has been decided to erect in one of the squares of Paris a monument to the memory of M. Pasteur. Statues or busts will also, no doubt, be located at his birthplace and in other cities. The Paris committee has, however, wisely determined that the statue obtained through international effort shall be located at Paris, where it will be seen by the greatest number of his countrymen and also by the greatest number of his admirers from other lands. The Paris committee has for honorary members the President of the Republic and his cabinet, together with about one hundred and sixty of the most prominent officials, scientists and other distinguished citizens of France. The active members of the committee are: J. Bertrand, president, member of the French Academy, perpetual secretary of the Academy of Sciences; J. Simon, vice-president, member of the French Academy, perpetual secretary of the Academy of Moral and Political Science; Grancher, secretary, member of the Academy of Medicine, professor in the Faculty of Medicine; Bruardel, member of the Academy and of the Academy of Medicine, dean of the Faculty of Medicine; A. Christophle, honorary governor of the Credit Foncier, deputy from l'Orne; Count Delaborde, perpetual secretary of the Academy orf Fine Arts; Duclaux, member of the Academy of Science and of the Academy of Medicine; Magnin, governor of the Bank of France, vice-president of the Senate; Baron A. de Rothschild, banker; Roux, assistant director of the Pasteur Institute; Wallon, perpetual secretary of the Academy of Inscriptions and Belles-Lettres.

The Paris committee has kindly extended the opportunity to the people of the United States to assist in this tribute of appreciation and love and have authorized the organization of the Pasteur Monument Committee of the United States.

The members of this commitee gladly accept the privilege of organizing the subscription, and of receiving and transmitting the funds which are raised.

We believe it is unnecessary to urge anyone to subscribe. The contributions of Pasteur to science and to the cause of humanity

were so extraordinary, and are so well known and so thoroughly appreciated in America that our people only need the opportunity in order to demonstrate their deep interest.

All can unite in honoring Pasteur. He was such an enthusiastic investigator, so simple, so modest, so lovable, and yet, so earnest, so great, so successful—his ideals were so high and his efforts to ameliorate the condition of humanity were so untiring that we anticipate an enthusiastic response from the whole civilized world. The United States will vie with the foremost of nations in this tribute. Chemists, zoologists, physicians and all others interested in science will wish to be represented. No one is expected to subscribe an amount so large that it will detract in the least from the pleasure of giving. A large number of small subscriptions freely contributed and showing the popular appreciation of this eminent Frenchman is what we most desire.

This committee supplies subscription blanks, which should be returned in the accompanying envelope, together with a money order, check or draft covering the amount subscribed. All checks, etc., should be made payable to "Treasurer Pasteur Monument Committee," and when received by the secretary a numbered receipt will be forwarded to the sender. The original subscription papers will be forwarded to the Paris committee for preservation.

It is our purpose to do our work as largely as possible through societies or other organizations. We prefer to have each organization appoint one of its members as an associate member of this committee with authorization to collect and forward subscriptions. The amounts thus far subscribed by individuals vary from fifty (50) cents to ten (10) dollars. It is hoped that no one who is interested will hesitate to place his name upon the list because he cannot give the maximum amount.

Please let this receive your early attention and in that way assist our committee which must conduct correspondence with the societies of the entire country.

REVIEWS.

The Nursing World Bedside Record for the use of physicians and trained nurses, designed by the editor of the Nursing World, Providence, Rhode Island, supplied by Messrs. John Carle & Sons, New York. This is a neat little book of record blanks and temperature charts for use in the sick room, and will be found a convenient time saver both for the nurse and physician.

The physician can cure the sick, but he cannot cure the dead.—Chinese.

Extracts and Abstracts.

On Some of the Limits of the Art of Surgery.

Delivered at the Forty-Seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

By N. Senn, M.D., Ph. D., LL. D.

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Mr. President and Members of the American Medical Association:—Modern surgery has attained a degree of development which entitles it to the distinction of a science and an art. As a science, surgery is of recent date, having been founded and perfected during the last half of the present century. As an art, it has been practiced for centuries by our ancestors with credit to themselves and benefit to the injured, the crippled and the sick. When Boyer wrote the introduction to his classic work on surgery he expressed the conviction that surgery had reached perfection. How little did he dream of the great changes that would be brought in the practice of his cherished profession by the progressive pathologists and surgeons of the next few generations! How innocent and absurd does such statement appear in the face of the labors of such men as Virchow, Rokitansky, Rindfleisch, Klebs, Recklinghausen, in pathology: Pasteur, Koch, Ogsten, Rosenbach, Baumgarten, in bacteriology; Lister, Langenbeck, Billroth, Hueter, Esmarch, Czerny, Gussenbauer, Nelaton, Verneuil, Terrier, Macewen, Gross, Agnew, in surgery: Terrier, Hitzig, Horsley, in cerebral localization; Spencer, Wells, Keith, Winckel, Martin, Péan, Ségond, Pozzi, Sims, Emmet, Battey, in gynecology, and a host of other faithful, unselfish workers who have made surgery what it is to-day and what it is intended to be—the most honored, respected and beneficent branch of the healing art. What a contrast between the standing of the surgeon of to-day in the community, the profession and from a scientific aspect as compared with his colleagues of only a century ago! It is not long since the art of surgery was limited to bleeding, cupping, leeching, setting of a broken limb, reducing a dislocation, stanching hemorrhage, opening an abscess or amputating a limb for injury or disease beyond the reach of conservative measures. He was the subordinate, almost slave, of the pompous, arrogant and self-confident physician of that time. He subsisted from the crumbs that fell from time to time from his master's table. The betterment in the standing and sphere of the members of the surgical craft during the last century is entirely due to the enormous progress that has been made in the science and art of surgery.

During this time the legitimate field of medicine has gradually diminished before the advancing columns of progressive and aggressive surgeons. The physician no longer has a monopoly over the diseases of all the internal organs. The physician's distinctive apparel and gold-headed cane of but few years ago no longer intimidate the surgeon; they have disappeared from the scene and the surgeon stands on the same level, if not higher, in every respect with the physician in the eyes of the masses and the estimation of the scientific world. Modern pathology and the new science of bacteriology have laid a permanent foundation for the steady and progressive advance of surgical thought and work. The inflammatory complications of wounds and the etiology of most of the chronic infective surgical diseases have been cleared up by bacteriologic investigations during the last twenty-five years, and the knowledge thus gained has enabled the surgeon to prevent in a large measure the former and to treat intelligently and with increased success the latter. Many of the most noted surgeons who have left a strong and permanent impression on surgical literature and practice during the last quarter of a century have been enthusiastic and practical bacteriologists and competent pathologists. The wonderful development of operative surgery during the same time is one of the earliest and richest fruits reaped from the vast and fertile field sown and cultivated by bacteriologists of every civilized nation. To the immortal Lister belongs the honor of having opened a systematic and successful crusade against the surgeon's most treacherous enemies—the pathogenic microbes. The great principles which he conceived and introduced into practice created a new era in surgery. Antiseptic surgery is one of the many fruits of his genius and the one to whom we, as a profession, and humanity owe more than to any other surgeon dead or living, has been permitted to live long enough to see the creation and blessings of aseptic surgery, the handiwork of his innumerable enthusiastic followers. Antiseptic and aseptic surgery have smoothed the rough and rugged pathway of the practical surgeon. Ordinary cleanliness has given way to surgical cleanliness. The almost universal introduction of antiseptic and aseptic precautions in the treatment of wounds in private and hospital practice has nearly eradicated the three greatest enemies of the surgeon of old, namely, hospital gangrene, erysipelas and secondary hemorrhage, and minimized the occurrence of suppuration and its manifold immediate and remote complications.

No wonder that a sense of security created by such wonderful changes made the surgeon bold. In consequence of such revolutionary changes wrought in the practice of surgery new territories were invaded and organ after organ, the seat of injury or disease, were subjected to direct surgical intervention. Step by step the scalpel found its way into localities where formerly the physician had reigned alone and supreme, and where its presence would have been regarded by him as convincing proof of homicidal intent. No better evidence can be advanced to show the difference in the kind and scope of work of the surgeon of to-day with the one before the pre-antiseptic time than a comparison between the works of operative surgery of now and then. The sense of safety which took possession of the surgeon and an earnest desire to extend his skill to the successful treatment of affections which had heretofore baffled the efforts of the physician, brought on a warfare on almost every organ the seat of real or imaginary disease. The physician found himself suddenly out of his long time honored routine practice. The specialist utilized the opportunity and left no stone unturned to extend their sphere of activity. Brain surgeons, abdominal surgeons, neck surgeons appeared on the scene and filled the medical press with accounts of their wonderful surgical feats. The old-fashioned gynecologist, whose chief occupation consisted in introducing and removing pessaries, cauterizing so-called ulcers of the cervix, swabbing out the uterus and inserting medicated vaginal tampons, became restless and anxious to exchange harmless, bloodless measures for the knife and scissors. His desire for bloody operations was not satisfied by sewing lacerations of the cervix and perineum. He felt that in order to keep abreast with the spirit of the present age he must increase his range of action, and in due course of time the ovaries, the Fallopian tubes and uterus became the theater of his aggressiveness. Even the acquisition of this additional territory did not satisfy his ambition. The adjoining great abdominal cavity, with its many important organs, was looked upon with a jealous eye and it has been made the common camping ground of the general surgeon and the gynecologist for several years.

The throat and nose specialist, under the same influences, became disgusted with his brush, powder-blower and atomizers; sharp spoons, chisels, and saws came into requisition, and the number of deflected septa, hypertrophic turbinated bones and third tonsil increased alarmingly and were attacked most energetically. The rectal specialist, who made a modest living by stretching the sphincter ani and ligating piles, saw a fortune in adding to his limited sphere of activity, resection of the rectum, and later, emboldened by his efforts, carried his crusade to the topmost limits of the large intestine.The average orthopedist

is no longer satisfied to correct deformities by the use of bloodless manual and mechanical measures; he has acquired a fondness for the knife, saw and chisel, so as not to be left behind in the procession. The genito-urinary surgeon has become tired of treating gonorrhea, strictures and syphilis; he can see no reason why he should not cut for stone, extirpate kidneys and perform plastic operations on the ureters.

The furor operativus manifested in these and other special departments of surgery, and its obvious results, render the standing and legitimate scope of the general surgeon very uncertain and indefinite at the present time. Let the general surgeon turn to the right or to the left, advance or retreat, and he finds himself on reserved territory. As for the physician, he is expected to answer night calls, prescribe for diarrhœa and whooping cough, watch cases of typhoid fever, measles, scarlatina and smallpox, and should complications arise and he does not report to the proper authority he renders himself liable to censure. Much of this ill-applied energy in the surgical world has resulted in detriment to patients and in retarding actual surgical progress. Operative surgery has been carried to extremes. A calm inspection of the ground that has been gone over will show "Some of the Limits of the Art of Surgery," the subject which I have chosen for this address.

Antisepsis and Asepsis.—The marvelous reduction in the mortality following injuries and operations which the present generation has witnessed is largely due to the prevention of wound complications by the employment of efficient antiseptic and aseptic precautions. Improved means of hemoitasis and the more efficient treatment of shock might reasonably claim a certain share in bringing about such a desirable change in the results of surgical practice, but what has made our work more satisfactory and the statistics of various operative procedures more encouraging is the prevention of infection, the protection of the patient against the immediate and remote effects of sepsis and suppuration. The treatment of wounds with these objects in view has been simplified and rendered more efficient from year to year, but it cannot be said that perfection has been reached. We are not yet in possession of an ideal absorbable ligature and suture material The person who will show us how to prepare the animal ligature and suture in such a way that it will not only be absolutely aseptic, but also antiseptic and without loss of its tensile strength, will be entitled to the lasting gratitude of the entire profession. The disinfection of hands and field of labor is open to future improvement. The important matter of drainage remains in anything but a satisfactory condition, and the questions frequently raised, when to drain and how to drain, must be definitely settled by future experience and research. There are surgeons to-day who do not take into account the possible failure of antiseptic and aseptic precautions in estimating the dangers incident to operative procedures. Have we not all heard so-called abdominal surgeons say that an exploratory laparotomy is devoid of danger? Is it not a fact that the abdomen is being opened daily by men who have not the faintest idea of what they may have to do, simply because they regard such a step as harmless and free of danger and the shortest and easiest way to make a diagnosis? To say that such a blind confidence in the efficiency and safety of aseptic precautions is not in accord with the work of the conscientious surgeons is to put it mildly. It is fortunate for the patients of such ever-ready and self-confident operators that the peritoneum under ordinary circumstances can dispose of more pathogenic microbes without harm resulting than any other tissue of the body. If it were not such a serious matter it would be amusing to see how such men explain an occasional death that occurs in their practice in cases where it was least expected. If, perchance, a post-mortem examination was held, the first statement made is that the peritoneum showed no evidence of inflammation, consequently death must have occurred in consequence of shock, exhaustion, bronchitis, edema of the lungs, or heart failure. Very recently a prominent surgeon in giving his testimonial in recommending a certain kind of cat-gut, made the statement that he had performed one hundred consecutive major operations without having seen a single drop of pus. I have no reason to doubt the veracity of this gentleman's statement, but I am firmly convinced that it would be difficult, if not impossible, to duplicate such an experience in the practice of the average general surgeon.

I have made it a duty on my part to familiarize myself with the advances made in the technique of aseptic surgery and have the good fortune to perform all my operations in two of the best hospitals in Chicago, and in a fairly equipped college clinic, and yet I am only too willing to confess that I never finish my day's work without seeing pus. I have a painful recollection of two amputations for carcinoma of the breast on private patients, in both of which every possible precaution was carried out, and yet to my utmost disappointment, both of them died of the most virulent form of sepsis I ever encountered. To offset these cases, I might refer to perhaps over two hundred similar operations in which, under much less rigid precautions, with few exceptions, faultless wound healing was obtained. I remember, too, a case of genu val-

gum in an adult treated by transcondyloid osteotomy under strict antiseptic precautions, where the operation was followed by violent suppurative osteomyelitis and extensive necrosis which for a long time seriously threatened the limb and life of the patient. I am sure that I am not alone in relating such experiences. Every surgeon is occasionally humiliated by such mishaps and here is the proper place to make open confessions. The careless, reckless remark so often made by men who ought to know better, that the surgeon who understands his business can make and treat wounds, which, if dressed properly, will heal without suppuration, has reached the ears of the legal profession and has already entangled many a worthy and honest member of our profession in the complicated and trying machinery of the law. I envy the surgeon who has implicit confidence in this or that method of preventing wound infection, but I am confident that I but voice the sentiment of the vast majority of surgeons by making the statement that one of the limits of the art of surgery at the present time is the inadequacy of our available resources in furnishing wounds, even under the most favorable circumstances, absolute protection against infection.

Phlegmonous Inflammation.—The employment of antiseptic and aseptic precautions in the treatment of intentional and accidental wounds has greatly diminished the frequency of progressive phlegmonous inflammation and its often disastrous consequences. That such an occurrence cannot always be prevented, even by the most scrupulous care and attention to details, every surgeon of experience is willing to admit. In the most virulent forms of phlegmonous inflammation the most heroic and timely treatment, local and general, is often fruitless in averting speedy death. In the most desperate cases, the surface lesion is often insignificant, the infection following the lymphatic pathways, soon reaches the general circulation, resulting in death from acute sepsis before any decided gross pathologic lesions have appeared at the seat of infection or in any of the internal organs. How rapidly general infection may take place has been shown by the experiments of Schimmelbusch, who found microörganisms in the spleen five to ten minutes after infection of the wound. Colin and Niessen demonstrated by their experimental work that amputation a few minutes after inoculation, of the ears and limbs of rabbits with pure culture of anthrax, did not protect the animals against generalization of the disease. Such cases in the human being fortunately are seldom met with, but when they do occur, the art of surgery is powerless in arresting the progress of the disease. Parenchymatous injections of solutions of carbolic acid or corrosive sublimate along the course of solutions lymphatics, and the internal use of alcohol in heroic doses promise the most, but in the great majority of cases the extension of the infection continues and terminates speedily in death from general sepsis. Whether bacteriology will furnish us with a more potent weapon in the treatment of such cases the future must determine. When the infection has resulted in suppuration the old adage ubi pus, ibi incisio remains as true to-day as before the microbic origin of pus was known. In the treatment of diffuse phlegmonous processes it is now customary to make free incisions, establish free drainage and disinfect the cavity by flushing it freely with a safe and yet efficient antiseptic solution, such as the saturated solution of acetate of aluminum, a 3 per cent solution of carbolic acid or a 1-5,000 solution of corrosive sublimate and apply to the part hot compresses wrung out of the same solution. A few years ago Helferich advised laying open of the entire cavity by a single incision, recently Kocher pleads in favor of small incisions for the reason that pus microbes multiply more rapidly when freely supplied with oxygen. I believe the best treatment is half way between these two extremes, that is, multiple incisions large enough to insert drains the size of the little finged with a view of establishing a perfect system of drainage. We cannot expect much from a single disinfection. In severe cases in which life is threatened by sepsis, I invariably resort to continuous irrigation with a saturated solution of acetate of aluminum, a non-toxic and yet very efficient antiseptic agent. The inflamed part should be immobilized and maintained in an elevated position until the inflammatory edema has subsided. The same treatment yields the most happy results in the treatment of acute suppurative inflammation of the large joints. One of the great shortcomings of the art of surgery to-day is the lack of measures to deal more efficiently with progressive suppurative affections and secure for suppurative cavities an aseptic condition in a shorter and more direct way. In cases of circumscribed abscesses it is generally believed that the sooner the incision is made the more prompt will be the relief and the more speedy the cure. Clinical experience has not confirmed these expectations. The old surgeons applied emollient poultices until the abscess became soft before they used the bistoury. No modern surgeon has any use for the filthy germ-breeding poultice, for which he has substituted the antiseptic, moist, hot compress which answers the same purpose, as it furnishes the necessary heat and moisture, and at the same time prepares the surface for the incision. We are,

however, almost as powerless as our forefathers in limiting, much less aborting, a suppurative inflammation. One of the greatest and most useful innovations in surgery would be a remedy, local or general, which would enable us to abort the process of destruction after the classical symptoms which characterize suppurative inflammation have set in. We must look to bacteriology to fill up this most important gap.

Acute Suppurative Osteomyelitis.—Closely allied to phlegmonous inflammation of the soft tissues is acute suppurative osteomyelitis as it is caused by the same kind of microbes and results in more or less extensive destruction of tissue. The etiology and pathology of this disease are now well understood and upon them is based the early operative treatment which is generally endorsed by the profession at the present time. The danger from general sepsis is greater in the more serious forms of osteomyelitis than a similar affection of the soft tissues owing to the location of the primary focus of infection and the frequency with which the adjacent large joints beome implicated during the progress of the disease. The early removal of the osteomyelitic product by operative interference, as a rule, relieves pain promptly, limits necrosis, guards against joint complications and minimizes the danger from general sepsis. Immobilization of the affected limb in proper position and the exposure of the osteomyelitic focus by the use of the chisel or gouge as soon as positive diagnosis can be made are the modern resources which have succeeded in greatly reducing the mortality of this disease as well as its immediate complications and remote consequences. There are, however, cases of acute osteomyelitis in which the earliest intervention of the art of surgery is powerless in preventing death from general sepsis. These are the cases of osteomyelitis in which simultaneously or in rapid succession a number of the long bones become involved and where the local signs and symptoms are overshadowed by the general symptoms which point to a progressive sepsis and which are seldom favorably influenced by either local or general treatment.

Tuberculosis of Joints.—Only a few years ago the surgeons who paid especial attention to diseases of the joints were enthusiastic advocates of early resection or arthrectomy in cases of tubercular joint affections. Typical resections were made regardless of the anatomical location or the extent of the disease. It was believed that such medical treatment would succeed in eliminating the local affection and in preventing the extension of the infection to distant organs by reinfection from the peripheral focus. Statistics prove that these hopes are unfounded and conscientious and thinking surgeons have substituted largely in place of operative treatment conservative measures. The surgeon forgets too often that tuberculosis of joints seldom appears as a primary affection, but, as a rule, appears as a peripheral manifestation of the existence of an antecedent perhaps undiscoverable tubercular affection of another organ, hence the removal of the accessible tubercular product does not necessarily protect the patient against tuberculosis of other joints, or organs, or general miliary tuberculosis. It is, on the other hand, a familiar clinical fact that the operative treatment of joint tuberculosis has not infrequently been followed by tuberculosis of other organs or general miliary tuberculosis. The short-comings of the art of surgery are well brought forward in the treatment of tubercular joints. In large clinics where but a few years ago resection of joints for tuberculosis was a daily occurrence such operations are now rarely witnessed. This change in practice is largely due to the beneficial effects obtained from intra-articular and parenchymatous injections of iodoform glycerine injections. I have resorted to this treatment in hundreds of cases with the most satisfactory results. In about one-half or two-thirds of all cases of uncomplicated joint tuberculosis, this treatment proves curative. It is of special value in the treatment of tubercular abscesses in communication with a tubercular joint or bone. From one to three or four injections usually suffice in obliterating the abscess cavity. The tapping and injection must be done under the strictest antiseptic precautions lest the operation will aggravate the case, perhaps render it hopeless, by becoming the direct cause of a mixed infection with pus microbes. As some persons are peculiarly susceptible to the toxic action of iodoform the minimum dose, two drams of a 10 per cent. emulsion, should be used in the beginning. In cases complicated by renal affections this caution should be increased, as any affection of the kidneys retards the elimination of the iodoform and thus increases the danger from intoxication. Another important precaution in tapping a tubercular abscess is not to puncture the skin where it is thin and cyanotic, as when it is made in such a place the puncture is very liable to give rise to a fistulous opening and consequently increased risk of infection with pyogenic microbes. The puncture must be made through normal skin, if need be some distance from the abscess, and after removal of the canula, it should be sealed with iodoform collodium and a small pledget of sterile cotton. Immobilization of the limb or part thus treated is often useful but not always necessary. During the process of repair initiated by the iodoform injections, the capsule

of the joint often undergoes great contraction which if not counteracted by an appropriate mechanical support may result in a deformity difficult of correction short of operative interference. In cases of joint tuberculosis in which this treatment does not succeed in effecting a cure, it will prove to be the best possible preliminary treatment to a successful arthrectomy or atypical resection. Iodoform is absolutely useless in the treatment of tubercular affections complicated by suppuration. The antibacillary effect of iodoform in such cases only asserts itself after the pyogenic product and its causes have been eliminated by operative measures or chemical disinfectants or by a combination of these two antiseptic resources. In cases in which the iodoform treatment fails, or in which it is contraindicated, arthrectomy and atypical resection have been largely substituted for typical resection.

Malignant Tumors.—The imperfections of the art of surgery become very apparent in the treatment of far-advanced malignant disease of any part or organ. The essential cause of carcinoma and sarcoma remains to be discovered. The science of surgery must first divulge the true nature of tumors before we can expect a decided advance in their more successful treatment. The essential features of the modern treatment of malignant tumors may be summed up very briefly as follows: Operate early and thoroughly. The treatment of inoperable sarcoma by injections of the sterilized toxins of the streptococcus of erysipelas and the bacillus prodigiosus has not filled the expected results. In my paper on this subject read in the Surgical Section of this Association at the last meeting I gave the results of my experience with this treatment. An additional experience since that time only confirms my views expressed at that time concerning the utter lack of curative power of these toxins in the treatment of genuine cases of sarcoma. The microscope is no infallible means of diagnosis in differentiating between small round-celled sarcoma and some of the granulomata. The curative effect of a remedy can not be established unless an absolutely correct diagnosis can be made of the disease in the treatment of which it is employed. The discovery of some remedy, which by its local or general action would correct erratic cell growth and transform embryonic into mature cells might possibly change malignant into benign tumors, and by doing so deprive them of their malignant clinical tendencies. Experimental researches in this direction might possibly lead to a rational treatment of malignant tumors short of a resort to the knife or caustics. At the present time the surgeon's resources in the treatment of malignant tumors are largely limited to an early and thorough use of the knife. Every surgeon deplores the fact that with the exception of carcinoma of the lip or of parts similarly exposed, the patients who apply to him for surgical treatment with few exceptions are suffering from malignant tumors which extend beyond the organ primarily affected and have given rise to regional dissemination, general metastasis or both. For instance, of the over 200 cases of carcinoma of the breast which have come under my own observation, I remember only one case in which, during the operation, the axillary glands were found unaffected, and in this case the columnar celled carcinoma, the size of a pea, had obstructed a duct, in consequence of which a retention cyst the size of a walnut developed, for which the patient applied for treatment. In cases of carcinoma of the uterus that come to me for examination and treatment, I find that only one out of every eight or ten cases is a proper case for a radical operation. In more than one-half of my cases of carcinoma of the rectum, I refuse extirpation of the affected organ, and advise in its place an inguinal colostomy, because the disease has extended to the pelvic connective tissue, the retro-peritoneal lymphatic glands or adjacent organs. Of eighteen cases of pyloric carcinoma of the stomach subjected to operative treatment, I found the disease limited to the part primarily affected only in one case; in the remaining cases the disease had extended invariably to the lymphatic glands, and in some of them to the adjacent organs, liver, gall-bladder, pancreas, omentum and colon. It is the operative treatment of advanced cases of malignant disease that brings so little benefit to the patient and so much disappointment to the surgeon. Asepis and a greatly improved operative technique have done much to improve the results of operative treatment of malignant tumors, but they have not succeeded in doing away with well-recognized restrictions upon the art of surgery to which I now desire to call your attention. There is, perhaps, no other department in surgery which presents more diversity of opinions than the selection of cases of malignant tumors for operative treatment.

The conscientious surgeon looks as carefully for contraindications as for indications for radical operations. He is concerned more for the welfare of his patient than his own selfish interests. A prospective liberal fee has no influence in changing his decision. He makes a careful examination of his patient, the tumor and its environments, before he recommends an operation. He has learned from sad experience that aside from justifiable palliative operations for obstructive malignant affections, imperfect operations have proved as detrimental to his patients as to his repu-

tation. He looks the ground over carefully before he decides to attempt a radical operation. The squeezing out of a fixed carcinomatous uterus between forci-pressure forceps is not likely to prolong the life of the patient or increase the reputation of the surgeon who ignores to such an extent the limits of the art of surgery. The removal of a carcinomatous breast without a thorough clearing out of the axillary space may increase, for the time being, the bank account of the operator, but it will surely prove a detriment to the patient. The partial or complete excision of the rectum for carcinoma complicated by regional infection is an operation attended by great immediate risk to life without a ray of hope of effecting a permanent cure. Such bold and reckless overstepping of the limits of the art of surgery is not calculated to increase the estimation of our profession in the eyes of the public or to receive the sanction of the conscientious, discriminating surgeon. The radical removal of a malignant tumor means more than the extirpation of the primary tumor; it means the removal of every malignant cell, whether in the immediate vicinity of the primary growth or in the same region. Evidences of distant metastasis furnish a positive contraindication to operative interference. Regional dissemination beyond the reach of complete removal of every vestige of tumor tissue, local and regional, without imminent risk to life, constitutes an equally forcible argument against a radical operation. Large surface defects made by extensive radical operations should always be covered by a plastic operation or by Thiersch's method of skin grafting. It has always been my aim to cover the wound with skin by either of these methods immediately after the extirpation of the tumor for the purpose of securing healing by the first intention, as I am satisfied that the slow process of healing of large surface defects by granulation, cicatrization and epidermization is conducive to an early local recurrence.

Surgery of the Three Great Cavities.—The systematic invasion of the three great cavities of the body for the treatment of injury or disease is one of the great triumphs of modern surgery. The profession has enlarged to a wonderful extent the field of operative surgery, but it has carried at the same time the work of the ambitious, enthusiastic surgeon beyond the limits of his art. Many of the bold attempts upon the organs of the three great cavities are far beyond the legitimate restrictions established by the science of surgery. The mania for achieving new victories outside of the sphere of legitimate, rational surgery has neither brought lasting reputation to the adventurers nor benefit to suffering humanity. Many of the new operative procedures remind one more of sensationalism than the product of mature, deep surgical reasoning. The accounts of new operations that are being constantly devised have left operative surgery in a state of confusion. Works on operative surgery that left the press six months ago are obsolete or at least unsatisfactory to-day. The technique of nearly every operation is constantly undergoing changes by the addition of important or unessential modifications. Nearly every surgeon has a flaming desire to connect his name with an instrument of his invention, a new operation or a modification of an old one. A new operation is devised, a case is found upon which it is tried, and if the result is in any way favorable, an account of it is sure to find its way promptly into current medical literature. Many members of the medical profession are willing and ready imitators, who are always anxiously waiting for new discoveries and improvements, ever ready to apply them in their practice without questioning their utility or justifiability. This blind imitation of the practice of others has been the source of great harm to confiding patients and has exerted a powerful inhibitory effect on the true progress of surgery. This is an age of bold surgery. The surgeon who is careful in the selection of his cases, slow and painstaking in his work, need not look for recognition on the part of his students or colleagues; it is the man who lays the abdomen open by a single stroke of his knife, removes two healthy ovaries and closes the incision and returns his patient to her room in seven minutes, who commands the attention of his audience and bears with self-confident dignity the proud distinction of being a bold and brilliant operator. In calling your attention to the limits of the art of surgery in the treatment of injuries and diseases of the organs contained in the three great cavities, time will only permit to point a few of the most flagrant transgressions of the established principles of surgery during the last few years.

Surgery of the Skull and Brain.—The use of the trephine in the treatment of fractures of the skull has had a varied experience since the time of Hippocrates. Trephining of the

skull for injuries is one of the oldest operations in surgery. From time to time strong arguments have been made against the indiscriminate operating for fractures of the skull. Stromeyer and his followers abandoned the operation of trephining, believing and claiming that the operation resulted in more harm than good to the patient. It is not difficult to conceive that at that time the conversion of a subcutaneous into an open fracture was attended by great risks from infection. The minimizing of the danger from infection by aseptic precautions again brought the trephine into general use not only in the treatment of fractures of the skull, but also in the treatment of pathologic intracranial lesions of a non-traumatic origin. Many surgeons now advocate trephining in all fractures of the cranial vault, claiming that the operation would reduce to a minimum the dangers from remote complications such as obstinate headache, epilepsy and insanity. The question arises, is such a position in consonance with rational surgery? Every surgeon knows that such remote complications after fracture of the skull not subjected to trephining are rather the exception than the rule. It is evident that operative interference in such cases has been carried to extremes. Even under the protection of aseptic precautions, the transformation of a closed into an open fracture of the skull is attended by certain risks which no surgeon can afford to ignore and which must be taken into careful consideration before operative interference is determined upon. This advice applies with special force to the treatment of fractures of the skull in children, as in them spontaneous elevation of the depressed fragment or fragments is frequently observed during the process of repair. There is no rule in surgery without its exceptions, hence the advice to use the trephine in fractures of the skull with depression without regard to the age of the patient or the presence or absence of symptoms, lacks a moral as well as a scientific foundation.

(*To be Continued.*)

Simple Preparations for Aseptic Operations.

In The Corpuscle for February, 1896, Dr. A. J. Ochsner gives some simple directions for preparing for aseptic operations under unfavorable circumstances. His methods are so simple that they deserve to be more widely known. Doubtless every surgeon of considerable experience has devised for himself very similar methods to be practiced in private houses where filth was an element to be contended with, and the less experienced operator will doubtless be interested in the study of his methods.

Dr. Ochsner says: Silk, silkworm-gut and horse-hair are enclosed in a few thicknesses of gauze and placed in a closed vessel—a tea-kettle or an ordinary tin dinner-pail with a lid will do. This is placed on the stove with enough water to thoroughly cover the material, and boiled for an hour. It is then preserved in a 5-per cent solution of carbolic acid in water. It becomes brittle after it is a year old.

Cat-gut is prepared as follows: E violin strings and medium banjo strings are the most convenient sizes, and can be obtained at any music store. They are immersed in strong sulphuric ether in a tightly corked bottle for one week; in strong alcohol containing one grain of corrosive sublimate to the ounce for one week; then preserved in strong alcohol indefinitely. The alcohol should be changed once a month as it becomes weakened by absorbing moisture from the air, which diminishes its antiseptic power.

Any suturing material which has been taken from the preserving bottle and handled during an operation should be put through the original process of disinfection before it is used. Instruments are most readily disinfected by boiling in a solution of bicarbonate of soda, a tablespoonful to the quart of water, for half an hour. Knives should be made out of one piece of metal, so they can be disinfected by scrubbing thoroughly with strong alcohol. Needles are very common carriers of infection. By heating them in an alcohol flame and then dropping them quickly into strong alcohol, they can be disinfected without having their temper spoiled.

The hands should be kept habitually clean. It is an extremely bad habit to "puddle in pus" perpetually. Of course, one cannot always avoid touching pus, but one can easily dress suppurating wounds or open small abscesses without getting infectious matter upon the fingers.

The best means of making the hands aseptic is by the free use of soap, warm water, and scrubbing-brush, then washing with strong alcohol in order to dissolve any fatty material which may still adhere to the skin,* then cleaning the nails with a blunt pen-knife or nail-cleaner, and then once more washing thoroughly with soap and warm water and scrubbing brush, in order to remove any loose material. The same method suffices for the preparation of the field of operation.

For the purpose of illustration, we will suppose that we are called to perform an operation for a strangulated hernia upon an exceedingly filthy patient in one of the dirtiest hovels in the country or in the city, with no one to assist us except a colleague who carries millions of microbes under his finger-nails. How shall we proceed to meet this emergency? We have in our surgical bag the necessary instruments

* The alcohol has a marked germicidal power when applied to objects moistened with water.

—a razor, scalpels, dissecting-forceps, scissors, hemostatic forceps, a pair of long-handled sharp retractors, needles—these have been sterilized at home and enclosed in a clean towel or canvas bag. We also carry a nail-brush, soap, a pint of strong alcohol, two ounces of flexible collodion, a five-yard package of aseptic or antiseptic gauze, and a half pound of absorbent cotton, also half a dozen clean towels wrapped up in a towel and this again in a piece of strong wrapping-paper. We have the necessary suturing and ligature material, prepared in the manner already described. All of these things can be carried in a moderate-sized satchel.

Arriving at the house, we place a tea-kettle full of water on the stove to boil; then we place the kitchen or dining-room table near a window, spread a quilt over this, and place a pillow at one end. All of this is covered with an oil-cloth, if one is at hand, and this with the cleanest sheet that can be obtained, or with one of our towels at the point where the operation is to be performed.

We next scrub our hands in the manner described, and treat the patient's abdomen and thighs in the same manner, carefully shaving the skin in. the vicinity of. the operation. For washing we use the water which has in the meantime been boiled. A pad of absorbent cotton saturated with strong alcohol is placed over the area to be operated upon, and left in place until the beginning of the operation in order to dissolve the fatty material contained in the upper layers of the epidermis.

Four plates are now found and thoroughly scrubbed with soap and hot water and then with strong alcohol. On one of these plates we place our instruments; on the second one, pieces of aseptic gauze to be used as sponges; on a third one, ligatures and sutures already threaded; on the fourth one, the dressings to be applied when the operation is completed. All of these preparations have occupied less than half an hour, and still they are as perfect as though the whole shanty had been turned upside down and every nook and corner had been disinfected.

The patient is now placed on the table and anæsthetized. The field of operation is once more scrubbed with water and then with alcohol, and surrounded with four clean towels. We wash our hands once more with alcohol and with boiled water, and ask our colleague to do the same. From this time until the operation is completed and the wound dressed, we touch nothing but our sterilized instruments, sponges, sutures and ligatures, and the wound. Should our colleague forget himself and touch any unsterilized substance, he must scrub again. The four plates with their aseptic contents are carefully placed where no one can reach them except the operator.

Our colleague is on the opposite side of the table and can assist us very materially by keeping the wound open with the long-handled retractor while we do everything ourselves. The operator is responsible for the wound and must see that no one else infects it. At the same time, he must not offend his colleague, because it will very materially enlarge his sphere of usefulness if he can gain both the good-will of his colleague and his admiration for skill and care.

After closing the wound it is well to seal it by placing strips of gauze two inches wide over the incision and fastening down the edges by applying an abundance of flexible collodion. A large absorbent-cotton dressing is applied over this and held in place with adhesive plaster and with a spica bandage in a manner which will prevent the patient and his or her friends from touching and thus infecting the wound.

Now the patient is ready to be returned to the filthy bed. Notwithstanding this and all other undesirable conditions, we can feel certain that the wound will heal primarily, and that the result of the operation will be perfectly satisfactory from the standpoint of aseptic surgery. The microbes in the bed, or on the ceiling or the floor, have not been disturbed in the least, but we are certain that no dirty hands or instruments have come in contact with the wound, and consequently it must be aseptic.—Medicine.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate; situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address "BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

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EYE SYMPTOMS OF BRAIN TUMOR.*

BY JAMES MOORES BALL, M. D., OF ST. LOUIS.

The eye symptoms caused by brain tumor are numerous and include paralysis of the third, fourth or sixth nerves, uni or bilateral exophthalmus from pressure on the cavernous sinus, changes in the fundus oculi, diminution of visual acuity, concentric limitation of the visual field, and hemianopic contraction of the field of vision. It will be sufficient for our purpose to divide the topic into:

(1) Changes in the fundus oculi, and
(2) Derangement of sight.

At the outset, we must remember that there are a few cases of brain tumor in which there are no symptoms, ocular or other. These are rare cases in which a brain tumor grows slowly, without increase of intra-cranial pressure, and without irritation in the vicinity of the lesion.

I. CHANGES IN THE FUNDUS.

Of all the symptoms of brain tumor double optic neuritis is the most important in diagnostic value, because, (1) it is an objective sign, (2) it is present at some period in the great majority of cases, (3) the most common cause of double optic neuritis is brain tumor. While in the vast majority of cases of intracranial tumor the optic neuritis is bilateral, the degree of inflammation is rarely, if ever, the same on the two sides at the same time. Cases of one-sided optic neuritis in brain tumor do occur, however, and in these rare instances Dr. Hughlings Jackson believed that the disk on the side opposite to the brain lesion is the more frequently afflicted; but, as Bramwell has remarked, the number of these unilateral cases is entirely too small to permit us to draw definite conclusions.

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May 1, 1896.

OPHTHALMOSCOPIC APPEARANCES.

In brain tumor we find either papillites or optic nerve atrophy. Papillitis is evidenced by a swelling of the intra-ocular end of the nerve. The clean-cut boundary line between the optic disk and retina is lost, the nerve seeming, on account of exudation, to overlap the adjacent retina, or the change may not be so well marked, the only abnormality noticed being a slight engorgement of the veins without swelling of the disk and with blurring of its edges. As a rule, however, the neuritis of brain tumor is a pronounced condition known by the term "choked disk." In typical cases the picture, when once seen, is easily remembered. The swelling of the papilla, great enlargement of the veins from compression by the swollen nerve fibers, the arteries diminished in size, the change in color of the nerve—all are present in a marked case. This disease runs a chronic course and after many months the signs of inflammation are succeeded by those of atrophy. In atrophy the ophthalmoscopic appearance is the very opposite of that of papillitis. In atrophy the nerve head presents different appearances according as the atrophy is simple, i. e., non-inflammatory, or secondary, i. e., inflammatory. As we may be called upon to examine a case in the atrophic stage, it is of great importance that the ophthalmologist be able to distinguish the simple from the secondary form of optic nerve atrophy.

In simple atrophy the optic papilla is pale, often of a bluish-white color, its edges well defined, the gray dots of the lamina cribrosa are distinctly seen over a large area, and the retinal vessels are unchanged in size. The optic nerve head presents the excavation of atrophy. This excavation is to be distinguished from the excavation of glaucoma on the one hand and from a physiological cupping of the disk on the other. The physiological excavation can be at once excluded by stating that it never involves the entire papilla; if there be an excavation involving the whole papilla, it is either glaucomatous or atrophic. If glaucomatous, there will be recession of the lamina cribrosa, and the central retinal vessels are seen climbing over the edge of the excavation, but they cannot be focused at this point, and also at the bottom of the excavation at the same time. The edge of the excavation in glaucoma is overhanging. The tension of the eye is increased except in glaucoma simplex and the retinal arteries either pulsate spontaneously or on moderate pressure. The atrophic excavation, while involving the entire papilla, is not so deep as that of glaucoma. There is no recession of the lamina cribrosa; the optic nerve is white; there is no increase of tension; the arteries do not pulsate spontaneously.

In inflammatory atrophy the papilla is traversed by connective tissue formed by the organization of an exudate. At first the papilla is grayish white; its margins hazy; the veins distended and tortuous; later the papilla is bluish-white or pure white, but the lamina cribrosa is not exposed to view (Fuchs). At this stage the papilla is small, irregular and shrunken; the arteries and veins are contracted and often enclosed in white streaks (Fuchs).

The causes of simple atrophy are, (1) spinal disease, particularly locomotor ataxia, which also generally presents the Arglyll-Robertson pupil and absence of patellar reflex; (2) brain affections, among which are disseminated sclerosis, tumor, and progressive paralysis of the insane, and (3) orbital disease, as orbital tumor, fracture involving the optic foramen, etc. In injuries to the nerve there are at first no ophthalmoscopic signs except the site of the lesion be so far forward that the central vessels are severed. In that case the picture is similar to the one found in embolism, viz., the retina is bloodless.

Valuable as is the ophthalmoscope in brain affections, the information it conveys is general, not localizing. Although double optic neuritis is present in 80 or 90 per cent of all cases of brain tumor, its absence does not exclude brain tumor, for these reasons: (1) the eyes may not be involved, the growth being remote from the optic tracts; (2) optic neuritis may have been present and have disappeared before the ophthalmoscope is used.

Other conditions causing optic neuritis are meningitis, lead encephalopathy, Bright's disease, cerebral abscess, hypermetropia, ovarian and uterine derangements, exposure to great cold, anæmia, acute infections, febrile diseases, syphilis, heredity, hydrocephalus, inflamma-

tory processes in the orbit (caries, erysipelas extending from face, periostitis, orbital cellulitis), rheumatism, multiple sclerosis.

Valuable as is double optic neuritis as a sign of brain tumor, we must remember that in some few rare instances all the rational signs of cerebral tumor have been present during the life of a patient on whom post mortem examination failed to reveal anything wrong. Such a case occurred in the practice of Dr. Hughlings Jackson, and Dr. Sutton made the autopsy.

Double optic neuritis does not help us in localizing the growth. Bramwell says: "Perhaps tumors of the medulla are less often attended with double optic neuritis than tumors in other parts." Starr's opinion is that: "Tumors of the cerebellum and corpora quadrigemina, and tumors upon the base of the brain and in the basal ganglia, produce optic neuritis more constantly and earlier in their course than tumors situated in the cortex or centrum ovale. Optic neuritis is usually double, though it always appears first in one eye, and is rarely equally intense in both eyes, but in a few cases it has been found in one eye only, and then is thought to indicate disease of the nerve in the orbit or in front of the optic chiasm, rather than a distant tumor." (Am. Text Book of Nervous Diseases, p. 484.)

II. DERANGEMENTS OF SIGHT.

In many cases of double optic neuritis vision is absolutely normal, both as regards visual acuity and the field of vision. Hence, it is not sufficient to use the test types and record the visual acuity. The ophthalmoscope should be used in every case of suspected brain disease. The derangements of sight which occur in brain tumor may be classified as follows:

1. Diminution of visual acuity.
2. Restriction of the field of vision.
3. Hemianopic contraction of the visual field.

Of these the first and second have no localizing value, being found in many and diverse conditions. Hemianopic contraction of the visual field is a localizing symptom of great value in brain tumor. Hemianopsia is met with, also, in hysteria and hemicrania.

Hemianopsia, in order to be understood, presupposes a knowledge of the anatomy of the optic tracts. Remembering this, and recalling the partial decussation of fibers in the chiasm, we are prepared to profit by a study of hemianopsia in brain tumor. Hemianopsia is a deficiency of one-half of the field of vision, the dividing line being vertical. It is called homonymous when the same side of each field is lacking, and the terms right and left are further descriptive of the part of each field which is blank. If both temporal fields are wanting, we speak of temporal hemianopsia; if both nasal, nasal hemianopsia. We speak of superior and inferior hemianopsia when the dividing line is horizontal. Such hemianopsias are due to local causes, i. e., plugging of the artery supplying the upper or lower half of the retina. Inasmuch as rays of light cross in the eye, inability to see objects in the right half of the field indicates a lesion of fibers supplying the left half of the retina, and vice versa. In superior hemianopsia the lower half of the retina is at fault.

The localizing value of hemianopsias may be expressed as follows: Bilateral temporal hemianopsia indicates an antero-posterior division of the chiasm, as occurred in Weir Mitchell's case, in which an aneurism had entirely divided the chiasm in the median line. The outer half of each retina retained the power of vision. Quite a number of cases of this form of hemianopsia have been published. Hemianopsia, however, is rare in diseases of the chiasm, and then is sharply defined only for a time, since we have to deal with progressive processes, as tumors, syphilitic and tubercular growths. (Kines.)

Nasal hemianopsia is extremely rare, as may be judged from the anatomical facts. A single lesion could produce it only under very peculiar conditions. It might result from bilateral symmetrical lesions. Nasal and temporal hemianopsias, so far as known, are due to lesions in the anterior fossa of the skull, involving the chiasm. One-sided nasal hemianopsia would come from a lesion of the outer part of the chiasm on the same side as the eye affected.

Lesion of the optic tract, between the optic chiasm and geniculate bodies would cause lateral hemianopsia. Lesion of the central fibers of the nerve between the geniculate bodies and cerebral cortex would produce lateral hemianopsia. Lesion of the cuneus causes lateral hemianopsia. Lesion of the an-

gular gyms may be associated with hemianopsia, sometimes crossed amblyopia, and the condition known as mind blindness. (Osler.)

DIAGNOSIS.

Given a case of brain tumor in which there is hemianopsia, where is the lesion? To determine whether the lesion be in the tract between the chiasm and the geniculate bodies, or in the central portion of the fibers between these bodies and the visual centers, Osler says this can be determined in some cases by Municke's hemiopic pupillary inaction. The pupil reflex depends on the integrity of the retina, the fibers of the optic nerve and tract, and the nerve center in the geniculate bodies, which receives the impression and transmits it to the third nerve, along which motor impulses pass to the iris. If a bright light is thrown into the eye and the pupil reacts, there is no question about the integrity of this reflex arc. In lateral hemianopsia the light can be thrown so as to fall upon the blind half of the retina. "If, when this is done, the pupil contracts, the indication is that the reflex arc above referred to is perfect, by which we mean that the optic nerve fibers, from the retinal expansion to the center itself, and the third nerve are uninvolved. In such a case the conclusion would be justified that the cause of the hemianopsia was central; that is, situated behind the geniculate bodies, either in the fibers of the optic radiation or in the visual cortical centers. If, on the other hand, when the light is carefully thrown on the hemiopic half of the retina, the pupil remains inactive, the conclusion is justifiable that there is an interruption in the path between the retina and the geniculate bodies, and that the hemianopsia is not central, but dependent on a lesion situated in the tract." (Osler, p. 848.)

"In all cases where the defect in the visual field is contained in one eye only, or in which, while there are defects in both eyes, they are not symmetrically situated, the lesion must be situated in the optic nerve itself—that is, in front of the chiasm—since all interruptions on the farther side of the chiasm result in the production of symmetrical defects in the visual fields." (Fuchs.)

"It is not generally appreciated that hemianopsia is a symptom often entirely overlooked by a patient, a case having been recently reported by Bleuler*, in which, though well-marked hemianopsia existed, the patient was entirely unaware of any visual defect. It is therefore exceedingly important that the extent of the visual field in both eyes should be carefully tested in every case of suspected brain disease, each eye being tested separately." (Text Book of Nervous Diseases, by American Authors, Philad., 1895, p. 492.)

DISCUSSION OF DR. BALL'S PAPER.

Dr. C. D. Wescott, Chicago: Dr. Ball has given us a most excellent resume of our knowledge of this subject. In fact, he has covered all the points so far as they occur to me, and I have absolutely nothing to add in regard to the eye symptoms of brain tumor. I want to call attention, however, to the fact that this paper emphasizes better than anything else could have done, perhaps, the point that our increasing knowledge of the relation of the eye to the nervous system is augmenting our possibilities of diagnosis in brain and nerve lesions. It also emphasizes the necessity for the study of the ophthalmoscope and familiarity with its use in the practice of general surgery and medicine. When most of us were students we had no opportunity to study the ophthalmoscope; we were not encouraged by our teachers to use it in general diagnosis. To-day in our best schools a practical course in ophthalmology is a requirement for graduation. In Rush Medical College we have had such a course for the last two years, and it has been obligatory. It is surprising with what readiness the students acquire a practical knowledge of the use of the ophthalmoscope. I have risen chiefly to suggest that we all do more in this direction; that we all study the simple means by which we may acquire the use of this important aid in general diagnosis. And while on this point, I want to mention the eye model which has been furnished by Queen & Co. of Philadelphia, as an aid to the acquirement of ophthalmoscopy. This company has put upon the market a paper model, with which we may imitate the various conditions of refraction of the eye and with which, if we are the patient, we may easily acquire the habit of relaxing our accommodation, which is the essence of ophthalmoscopy. After a few hours' practice with the ophthalmoscope and

*Archev für Psychiatrie, Vol. XXV, p. 39.

this model one is prepared to examine a patient's eye.

The best text book is Gower's Medical Ophthalmoscopy. It is written in a very pleasing style and unfolds the possibilities of the ophthalmoscope in such an attractive way that you will all be pleased to take it up, I am sure.

AN ADDRESS.*

By J. T. Brooks, Esq., of Pittsburg, Second Vice-President of the Pennsylvania Lines West of Pittsburg.

Mr. President and Gentlemen: I have long looked forward with interest to an opportunity of meeting the claim agents of the American railways. I was promised that pleasure two years ago, but events which I could not control made it impossible for me to realize my wishes at that time. I am entirely within the bounds of truth when I say that I have looked to the coming of this event with pleasure, because I knew it would bring me face to face with a body of men whose labors are worthy of record, and who, I know, are performing work for the great American railway systems which is of the very highest importance.

My only regret is that I have been so busy that I could not prepare myself worthily for this occasion. Your duties are incessant in railway service, and you know that all men who are engaged in that service are also busy. You have also learned that nothing of much value can be produced in this world without labor and a certain amount of thought, not even a speech. However, there are several points connected with the particular duties to which you are assigned with which I am familiar, and I hope to be able to speak in reference to them in a manner that will not be unsatisfactory to you.

The position you occupy is properly one of evolution. The human race itself, and every branch of human industry, so to speak, is in a stage of progress or decline. As time advances, it meets new conditions and must provide for new troubles. The progress or retrogression of the enterprises, in which men are engaged depends entirely upon the character of the men who are engaged in them. If they are intelligent, if they are devoted to the work in which they are engaged, if they engage in that work with a personal interest—not merely a perfunctory interest—and if they have a sincere desire to promote the good of the cause in which they are employed, nothing is more natural than that ideas should occur to them, which will enable them to make their work more interesting to themselves and more valuable to their company. Therefore, railway managers, railway representatives and employes, in the prosecution of their work, which has been going on in this country for half a century, have come to the conclusion that a well-organized claim department is indispensable to the highest degree of success in railway operation. You claim agents are, therefore, just as reasonable a product of the process of evolution as can be found in any department of human industry.

Passing from that point to the one which is most prominent in my mind, what do you find it is in the prosecution of your work that has contributed most essentially and most happily to your success? Precisely what wise and thoughtful men find in the pursuit of other employments. That you register greater progress, that you attain to a higher degree of success, in proportion as you confer with other men engaged in similar work; contrast your ideas with theirs, give your experience and get theirs, and, acting together, agree upon certain principles of action and rules of procedure, which will guide you individually when you go forth to the four corners of the world to carry on your work. Therefore, your annual meeting here is the second step in a process of evolution, the credit for which belongs exclusively to yourselves.

Passing from these general considerations to others more particular, what do you find—you have been for years in the service of railway companies—it is in the discharge of your daily duties that conduces most to your own ease of conscience, and results in the greatest degree of good to your company? Without stopping to consider the result of your efforts in any particular case which is under consideration, what do you find is the finest incentive to high and noble action? Surely it is that you will be loyal to the company which employs you.

The executive officers of railway companies are busied incessantly with a certain class of

* Delivered at the Convention of Claim Agents held at Pittsburg, Pa., May 28, 1896

railway topics, and men in the other departments have their particular questions to consider and decide; men who are charged with the responsibilities of transportation have their work to perform, and those who are in charge of freight and passenger traffic have their special duties to attend to. Now the claim agents, who are a part—and a vital part—of the law department of a company, have their special functions to perform, and each of these departments which make up the whole of a railroad system is charged for the time being with the responsibilites and the cares of the particular class of railroad business which is assigned to it. Therefore, my proposition on this point is, that a man who is a good claim agent and who aspires to be an honorable man in that profession, and to win the highest success possible, should be inspired with the strongest sense of loyalty to his employer, conscious of the fact that his associates in other branches of the railway service look confidently to him, without a thought, without a suspicion that he will serve the company other than faithfully in every respect in which the company's interests are committed to his charge. We all recognize the fact that when a man is entrusted with the performance of a duty—when children, decrepit people, women unversed in business, or business men whose time and thoughts are engrossed in other matters, turn over to this man or to that man the care of a particular branch of business, they have a right to expect from him steadfast loyalty and perfect integrity. You all concede that thorough uprightness is expected of that class of persons who are known so widely as trustees, executors and administrators. In the same sense, you, in the discharge of your duties, for the time being hold the key of the treasury of the railway company. When your decisions are made and your bills are rendered in favor of an injured party, nobody doubts that you have done as fairly, as wisely and as properly for the railroad company you represent as it is possible to do; therefore, your bills go through without a question, because we say, we know that John Smith, or William Jones, or whatever our claim agent's name may be, is as loyal to our company as we are, and we may be certain that he has exercised his best patience, industry, ingenuity and judgment to get our company out of trouble. Now there, I say, is an illustration of the fact that you occupy a high and responsible position in the railway service, since your drafts at sight, on the treasury of the company, are honored without a question.

Now, what does that loyalty that I speak of require you to do? I have no fear of the answer which any man in this assembly will make to the question I am going to put. Does it require you always to exact the last cent or the last dollar that you can in a settlement with a person who has been injured, or with the representatives of one who has been killed, regardless of every consideration, regardless of all circumstances? Does your strict sense of duty, your high sense of honor, in a case where the interests of the company are committed entirely to yourself, and where the company is manifestly in the wrong, does it require you to yield the lowest possible sum to an injured party, without any regard to the injuries or circumstances of the injured one? I know I am treading on delicate ground, but I am ready to answer the question to my own conscience and say that justice should always be done. I say that among intelligent men, and especially men who have attained to high standing and good character in business life, there rests at the bottom of the heart of every one of them a thought that there is a fitness of things which every man's conscience should recognize, and that you should come as near doing justice to the injured as you can, just as much as you should come as near as you can doing justice to your employer.

I shall not take time to prove to you what justice is or that justice is due to all men. In what I have to say on this branch of the subject I shall confine myself simply to the politic side of the question. What is the consequence in the course of years of a claim agent disregarding the principles of right in settling with parties who have claims against a railroad company, who feel it to be his duty, and rejoices when he can perform it, to wring the last cent of concession out of an injured person, or the representative of a deceased person, on the one hand; or who, on the contrary, tries to shed the beneficent rays of an enlightened conscience over the subject that is under consideration, and yields to that sentiment of justice which, by common consent, prevails among men, and enables you to say

whether you have done in this case, or in that case, the thing that is right or the thing that is wrong? What is the effect, I say, upon the character and welfare of your company of those two different courses of action? Whether the claim agent, on the one hand, exacts the last farthing possible for his company, or, on the other hand, approaches every case and settles it with a beneficent purpose, not only to serve his company loyally, but to do justice to the injured party? We have had warnings of these different courses of procedure and we need no dissertation nor historical description of Company "A" or Company "B" or Company "C" to advise us what will be the result, if we follow one or the other of these courses of procedure. The representatives of railway companies are known to be identified with power, with wealth and with great influence, and no man can be in the service of a railway company, at least in America, without being recognized as a man who is fortunate in some sense in being allied with a railroad company; therefore, the representative of a railway company is a mark for observation and criticism in the community where he lives. He stands in that respect a little different from other men. Now, what is the result? Suppose a claim agent follows the course first indicated, and in the course of his business is invariably harsh and pitiless, and extorts the lowest settlement possible out of a mutilated person or the representatives of one who has been killed? He conceals facts that he knows are against his company, sometimes perverts and falsifies those facts, and is willing to deceive and impose upon an ignorant person, in order to save a little money for his company. He may save a few dollars in one case, but the party who has been injured, and afterward wronged, does not keep that fact to himself. His neighbors want to know what treatment he has received from the railroad company for the loss of an arm, or whatever his injury may be. So that there are many people in a community who know at once what the railroad company has done for the man. Now, it is not long before that claim agent has to settle with somebody else. If the means of communication are not very good, it is possible that the next man he has to deal with may not have heard of the case described and he, too, may be duped and cheated by the claim agent, but presently affairs come to that state where everybody knows that that particular claim agent is an unscrupulous man, and when anybody is injured and is asking about where he can get advice and to whom he can go in his trouble, he will be told: "You cannot trust yourself with that claim agent; you had better get a lawyer, get somebody who is a match for him and let him sue the company." So that in time the claim agent acquires an unsavory reputation, and, unfortunately, at the same time he is bringing his railroad company into disrepute, because the public do not discriminate between the corporation and the acts of its representative. So that under such a course of procedure, it is not long before the whole community comes to look upon that claim agent and the company which he represents as unprincipled, grasping and despotic.

Now what is the effect of such conduct? We have seen what is in juries; we have seen what is is on boards having power of taxation; we have seen what it is in legislatures, and even in Congress. In other words, there is not a department of the administration of public affairs into which the knowledge does not come of the character of a railroad company and its employes. It may be that the injured party himself may some day sit upon a jury in a case in which a railroad company is involved, or on a taxing board, in the legislature or in Congress; or, if not a member or judicial officer himself, he is sitting on his portico some night and talking with his neighbor, or is in one of the offices in the county building, and there, in the presence of the sheriff or the clerk, or some of the county officers, he is relating his own experience, or that of John Smith, in getting a settlement with the railroad company for the loss of his arm. He tells his story and the railroad company is not there to defend itself, even if there was a defense to be made, and there goes forth into the heart of every man who listens to that tale a feeling of resentment against that railroad company, not merely against the unscrupulous claim agent, but against the company which he represents, and then woe betide the company when the man who has heard that story is on a jury or on a taxing board, or in the legislature, when the interests of that railroad company are at stake.

I have seen the operation of cases of that

kind in multiplied instances, and I have seen the evil consequences of them; I have also been permitted to see the very reverse, where the representatives of a railroad company, recognizing, in a particular case, that the company is in the wrong, do the very thing which one neighbor does toward another neighbor when he has wronged him. He feels that it is just for him to repair that wrong, and he does repair it as far as he can. He recognizes the duty that rests upon his company, as well as the good policy of the act, to seek to do justice to the man with whom he deals; and in that way he protects his company from bad repute. While the growth of opinion and the growth of character is often slow—it is sometimes disheartening that it is so slow—yet, ultimately that railroad company, through the aid of that honorable man who represents it in the claim department, may feel just as sure of honorable recognition and of fair treatment in the community where the railroad company's interests are under public consideration as any private citizen. Therefore, I say that the welfare of the railroad company is promoted by your exercising the sentiment of justice in your dealings with every injured man. Try to do as near as you can what your conscience tells you is right, and I will trust your conscience in every case, and, further than that, I will trust the officers of the railroad company to sustain you.

There are swindlers abroad in the land, and no men know it better than claim agents. There is no class of men, unless it be hired detectives, who have presented to them as many phases of duplicity in human nature as the claim agents of railroad companies. So that when we come to consider the mental characteristics which the claim agent should have, I reckon among the very first the power of penetration that enables him to look into a man's face, to weigh his words and determine whether he is a swindler or whether he is an honest man. The impressions he receives are sometimes erroneous, especially so if they are received too hastily. You are not called upon to decide a case the first minute, nor the first day, nor the first week after you have had an interview with the person who says he has been injured. In cases of alleged nervous prostration, injury to the spine and other favorite ills of swindlers, where you cannot see that a leg or an arm has been broken; or where a man says he has an indescribable sensation and cannot tell you what it is, cannot tell because he hasn't anything of the kind; in such cases take your time to decide the claimant's sincerity and be diligent in hunting up his record. You will soon have intelligence to enable you to distinguish between fact and fraud, and, when sure of your point, act according to the merits of the case. Give not a cent to the swindler, and if he has swindled you, follow him till the prison gates close upon him. But if he is honest and has really been injured and is reasonable in his demands, your heart will tell your mind how you should act. Do by him as you would like to be done by in similar circumstances. I know of no safer rule in dealing with an honest man than to apply the Golden Rule, and do unto men "as you would that they should do unto you." It sometimes seems trivial, some may think it seems unmanly, to refer too often to the Golden Rule. We learned that rule at our mother's knee, we learned it when we were children and when the question at issue was about the division of a piece of cake or an apple, a few chestnuts or a little candy. I have been working pretty busily all my life, and I am ready to make the confession now and here, at the risk of being considered a weak-minded man, that I know of no safer guide on earth, in the largest as well as in the smallest transactions, than the Golden Rule; it is good for great men as well as for little children.

Now, then, what other faculties are you called upon to exercise in the consideration of claims? Not only penetration, which enables you to distinguish between truth and falsehood; not only patience in the investigation of facts, and diligence in collecting all of them, but a sound judgment, a saving common sense of what is proper to do in any particular case. Entirely apart from the question of loyalty to your company or justice to the man with whom you are dealing, there are always circumstances that call for the exercise of a wise judgment; having determined what is just in this matter, and having every variety of men to deal with, I know of no place where a sound judgment can be exercised with such fruitful results to a railroad company as by a claim agent, in determining whether he had better settle or stand a lawsuit, just how far

he will go to secure a settlement, and where he will stop and allow his company to be sued, rather than be wronged. Here is a faculty which no man can say he was born to; it is the wisdom which comes of understanding, and experience gathered year by year, which ripens his judgment, so to speak, just as years of sunshine and showers ripen and develop the tree until it grows to a state of perfection. A man's mind is subject to influences, just as the creations of nature are. He receives impressions; he acts on them wisely and profits by them, or he acts on them unwisely and suffers by them. If he be heedful of his steps, if he learns to reflect and ponder upon his experience, to consider when and why he made mistakes, and when and why he acted wisely, these reflections will educate his judgment and make him a wise man; and just to the extent that he has thus educated his judgment and perfected his wisdom he will be able to draw the threads of what is fit and fair in every case which comes before him.

I have mentioned, briefly, as I am compelled to do, what I look upon as the fundamental requisites of a successful claim agent, not only with reference to his success as a claim agent, but with reference to the welfare of the company he serves. The recapitulate, therefore, I think that the conduct of the claim agent should be guided by a sentiment of loyalty to his company, and of justice to his fellow men. He should feel that he is working, not simply for to-day, but for all time. The reputation, the standing of the railway company he serves will survive him many, many years, and I would like to see every member of this association recognize, with me, the fact that the character, the reputation, the prosperity of his company, not merely in his own day, but with generations who are to follow him, will depend largely upon the manner in which he performs the duties of the present day and hour.

Finally, how can these traits of mind and heart be sharpened, quickened, broadened and strengthened? In considering this branch of the question I have mentioned but one or two points, advising that you make careful observation of your own conduct, note down in your own heart, you need not tell the world about it, but make a note of it in your own heart and for your own benefit, whether the claim which you settled yesterday was settled equitably or unjustly. If you have done well, that act has the approval of your conscience. Now, then, by keeping that sort of a mental and moral diary of your own transactions, your mind becomes quickened and broadened, your conscience is strengthened and educated, and day by day you become better qualified to serve your company and add to your own reputation, and when Nature calls you away you leave your company in higher standing, with better credit and a better character than it had when you began to serve it, or than it would have had if you had pursued a different policy. Serving it, therefore, with an enlightened moral sense, and with an intelligence which has been educated by these mental observations which you make upon yourself and record in the diary of your mind and the diary of your heart, I say you are qualified to produce the best results for your company, not only in the day and generation in which you live, but in the far distant future, whose limit it is not given us to discern.

Now, gentlemen, I am conscious that I have given but an outline of what might be said, and I would be glad to talk with you longer, but, unfortunately, my time is limited and I know that yours is; and so, welcoming you to this city and deriving the highest pleasure in the motive which draws you together, and in your desire to make the best of yourselves and your duty and your position, and to exalt yourselves and your office and the companies with which you are associated, urging upon you the necessity and propriety of coming together often, comparing notes and giving each other the benefit of your individual experience, what you have learned and what you have done, I thank you for the attention you have given me.

A violent temperance advocate, upon being ushered into the dining-room of a friend, found the host and another guest just in the act of discussing a brace of roast ducks, with a bowl of punch in the background. He was asked to join them. "No, no, gentlemen," was the reply. "Give me a glass of water and a crust. You know not what you are doing. You are digging your graves with your teeth." Both gentlemen, however, outlived him.

FIVE CASES OF DISLOCATION AND FRACTURE OF THE SHOULDER.*

By Howard J. Williams, A. M., M. D., Macon, Ga.

These five cases, two of simple fracture of the humerus near the shoulder-joint, two of dislocation and one of fracture and dislocation, have come under my observation during the past seven months. They are reported simply to call attention to the necessity of early diagnosis, prompt reduction and careful after-treatment:

Case I: J. S., male, 25 years old, white, machinist, had his left shoulder dislocated in a wreck on August 30, 1895. The dislocation was of the sub-coracoid variety and was promptly reduced without the aid of an anæsthetic at the scene of the wreck. Upon reaching his home he placed himself under the care of his own physician, who kept the arm bound to his chest for a month, without passive motion. Three months later he was sent to Dr. McHatton and myself because of limitation of motion in the shoulder-joint. He could not raise his arm to a right angle from the body and could not place his hand upon his head. Ether was administered and the adhesions about the joint broken up. Anodyne lotions and daily passive motion were ordered, with recovery of a large part of the use of the joint.

Case II: W. M., male, 22 years of age, negro, porter on a Pullman car, had his right shoulder dislocated (sub-coracoid) in a wreck, February 29, 1896. I reduced the dislocation under the influence of chloroform at the scene of the wreck and placed temporary dressings on the arm and body.

The patient was sent to the hospital and placed under the charge of Dr. McHatton, March 1, 1896, and early passive motion instituted. Recovery followed with no loss of motion in the joint.

Case III: E. F., male, aged 48, white, engineer, had his left shoulder dislocated and the humerus fractured near the joint, in a wreck in December, 1895. Under chloroform, the dislocation was reduced and the fracture adjusted by Dr. McHatton and myself at the wreck. He was admitted to the hospital and kept under close observation for two weeks, early passive motion being instituted. He was then transferred to his home at Rome, Ga., and was under the charge of his family physician. The dressings put on him before he left the hospital were undisturbed for three weeks. When they were finally taken off he had only slight motion and could not carry the arm six inches from the side of his body and could not move the arm forward or backward at all.

March 16, 1896, he was returned to us for treatment. He was chloroformed and by violent manipulation the strong fibrous adhesions about the joint were broken up. Daily passive motion, massage and electricity were used. The deltoid and other muscles about the joint were wasted by non-use. He remained under treatment in the hospital for seven weeks. Once every ten days chloroform was administered and vigorous passive motion used. He then could carry his arm outward by his own effort to an angle of 45 degrees, and had recovered nearly the entire forward and backward motion. Under the anæsthetic his hand could be placed upon the top of his head and the arm carried nearly vertically above the joint. He will never recover the complete use of the joint, but will in time regain much of the voluntary use of the limb.

Case IV: D. C., female, 75 years old, negro, laundress, fell on the pavement on March 1, 1896. March 6 she sent for me, and finding the arm and shoulder swollen, painful and deformed, I suspected either fracture or dislocation. I had her sent to the hospital at once. Her general health was good, but she had a very marked arcus senilis. The urine was examined with the following result: sp. gr. 1020, no albumen, no sugar.

On March 7 chloroform was administered and a fracture of the humerus just above the surgical neck was discovered. Splints were applied. At the end of the second week gentle passive motion was used. The forearm and hand were badly swollen and painful, and there was pain in the scapular region.

Again, at the end of the next week, passive motion was used. Owing to her extreme age we cannot say what will be the final outcome of the case, but hope to recover considerable motion.*

*Read before the Central of Georgia Railway Surgeons' Association, Augusta, Ga., April 14, 1896.

*May 23, since reporting the above before the association, I regret to say that while she has some motion in the joint, it is painful, the swelling of the forearm is still present and there is some deformity left about the shoulder.

Case V: A. W., male, 51 years old, a negro laborer, fell out of the door of his house, September 19, 1895, producing some injury to the left shoulder. On September 22, 1895, he was admitted to the hospital and, in addition to his injury, it was found that he was suffering with advanced Bright's disease, feet and legs œdematous, insomnia, hiccough, obstinate diarrhœa, urine largely increased in quantity, sp. gr. 1014, slight trace of albumen and tube casts. The shoulder was swollen and painful. Chloroform was carefully administered and a fracture very high up was found, which we thought to be in the anatomical neck. Dressings were applied.

His diarrhœa could not be controlled, the hiccough persisted and at the end of the second week coma developed. He died three days later.

The shoulder-joint was opened after death and the head of the humerus, with two inches of the shaft, removed (specimen exhibited). It will be seen that the fracture is just half an inch below the anatomical neck and transverse in direction, and it will further be seen that there is a split running into the anatomical neck. There is a natural groove on the upper and outer part of the anatomical neck in all bones, but in this case the split is deeper, and by a little manipulation is can be made to open. This case came very near being comminuted or impacted. The cancellous tissue of this bone is very thin and friable. This is the highest fracture I have seen post-mortem. It was not intracapsular. Fracture of the anatomical neck is doubted by some authorities, but Gross and others record cases.

As the shoulder-joint is the most important joint, particularly to the laboring man, we should be extremely careful to make an early diagnosis of all injuries, using an anæsthetic if in doubt. If swelling has occurred an anæsthetic should always be employed. As soon as discovered, measures to reduce the deformity should be instituted; no delay should be allowed. When there is a combination of the two injuries, fracture and dislocation, without an external wound, if there is great difficulty or impossibility of reducing the dislocation and adjusting the fractured ends of the bone, an incision, under antisepticism, should be made and the deformity corrected by mechanical means rather than allow the functions of the shoulder to be lost. After-treatment to prevent inflammation should be used. Rest is the first indication, followed by cooling lotions to the injured parts, but rest should not be carried too far. It will be seen that in two of my cases this occurred. The joint was allowed to remain bandaged for three weeks in one case and for one month in the other. Early passive motion should be instituted in all injuries of this joint to prevent faulty adhesions and restore the usefulness of the joint. In the case of the old colored woman, I think the bone was comminuted and her age was against successful repair of fractured bones. We used passive motion but failed to recover much use of the joint.

SHOULD WE HAVE PUS IN RAILWAY SURGERY?*

By Lester Keller, M. D., Ironton, Ohio.

One to whom the above question is put would most likely answer—yes, if we have it anywhere. We formerly had it in almost all kinds of cases, we sometimes have it now, but it surely should be a rare thing where we have control of our patient from the start.

We look with awe upon a man who speaks with authority, but when we get in a meditative mood we sometimes wonder whether even he might not be mistaken. Our Railway Surgeon, that contains so many good things and is supposed to be the beacon light for the way-station railway surgeon, sometimes contains things that make us sit down and think: "How different from the results we have been trying to obtain!" And we wonder whether the editor really means it—whether it is really so.

'From an editorial in the issue of November 5, 1895, we take the following: "While the presence of pus may be lacking in a great majority of operative cases, yet in accidental surgery its presence is the rule, and its entire absence is a marked exception. Again, it will be noticed that it is almost as universal an attendant as it was prior to the introduction of antiseptics. Even in amputations, necessitated in consequence of the crushing of limbs by ponderous wheels, particularly when the inferior extremity is involved, under the strictest

* Read by title at the ninth annual convention of the National Association of Railway Surgeons, at St. Louis, Mo., May 1, 1896.

antiseptic or aseptic precautions, healing by first intention is not obtained in one case out of ten—yes, we can almost say not one in twenty cases." Can this be so? Hardly. Particularly must we object to the assertion in regard to the amputation of lower extremities. Our experience has not been such and others with whom we have talked confirm us in our opinion. We should have as good results here as in any case where traumatism is the cause of amputation. Were I to have pus in a wound of that kind I would think I was to blame.

When I speak of having pus in railway surgery I mean in all cases, large and small. I fear that we, as a body, devote too much time to the consideration of the severer cases and not enough to the more trivial ones. Our reports of an operation after fracture of the spine are very complete. Being very careful of our asepsis, we would have been much chagrined to have had pus; in fact, it would have been disastrous to our case. We are prone to dismiss a brakeman with a mashed finger with much less ceremony. I once heard a most eminent surgeon deliver a very fine lecture on the use of antiseptics in surgery, and within a month saw him apply a dressing to a mashed finger which I should have been ashamed to have seen coming from my office. Our crying evil, as surgeons, and particularly as railway surgeons, has been the lack of attention to little things. A mashed finger may be a small thing in the surgeon's estimation, but it is a large one to the man who owns it.

We must not depend on asepsis alone; we must use antiseptics if we would succeed. There are many of them, and good ones, too, and it matters not so much which one we use as how we use it. We must not undo the good work of our antiseptic by using a suture not properly prepared. We might get our operating field in good condition by using soap and water. Surely, these are important, but how much more certain of good results are we when they are supplemented with some efficient antiseptic. The half-read and illy understood writings of the great Tait have caused more suffering than he has ever saved by his wonderful skill. I do not know of a general practitioner who attemps to do surgery and makes failures, because he is not careful of his asepsis and ignores his antiseptics (and notice, I associate the two conditions), but quotes Lawson Tait and excuses his failures because he has followed "the very best." I have no idea that Tait ever intended to be so interpreted. He, no doubt, would use antiseptics if he were doing railway surgery away from his hospital and under the conditions with which most of us have to contend. The avenues for the infection of a wound are so many that it keeps us constantly on the lookout to keep from spoiling the work well begun and almost perfect. I have seen a surgeon, very elaborate in all his details in preparing for an operation, careful of his hands and all, and then, after the operation was carefully done, make one last wipe across the stump with the cleaning-up towel.

I have seen a man, who thought he was careful, put his silk ligatures in a carbolic solution for fifteen minutes and think they were sterile. This same man often complained that he had a little "stitch hole" suppuration.

Often the meddlesomeness of a patient or his friends spoils our good work. It is next to impossible to make a man believe you are not neglecting him if you put up a small injury and tell him to report at your office in a week. The chances are, if he has had no experience with an antiseptic surgeon, that he or his friends will find some excuse for opening it, if only for a peep. To sum up, if we have a correct idea of the principles underlying antiseptic surgery, will follow them out in the minutest detail and will control the curiosity of the patient and his friends, we will have no occasion to think pus is any more necessary in railway surgery than anywhere else—and that is very seldom.

You need not doubt; you are no doctor.

Science is knowledge and art is skill; or, more fully, science is organized knowledge, while art is educated skill. The same ideas are expressed by the terms "theory" and "practice." This is the fundamental distinction. Here art is actual skill, practice or doing, but art has a second meaning; it signifies, also, a body of rules, or precepts, that guide skill, practice or doing. This is the sense of art in the statement that science teaches us to know and art to do, or in the statement that the two differ, as the indicative mode differs from the imperative, the first making declarations, the second issuing commands. Hinsdale.

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SURGERY AT THE CROSS ROADS.

Apropos of the statement that aseptic surgery can be done anywhere where hot water can be obtained, we have a little story to tell.

Not very long ago, during one of our outing trips, we visited an old friend and classmate whose lot has been cast in the country, or almost in the country, at a little railroad town, a center from which the farmers ship their produce, and in the company of this genial country doctor we spent some very pleasant hours. Born and bred among the people whom he serves, he began the study of medicine about fifteen years ago with a common school education and the robust health of a farmer's son as his capital. College life in the metropolis failed to spoil him or to make him discontented with the home which he had left, and he determined to return to his people and to do better work, if it was possible, for those whom he knew and who had always been his friends. That he has succeeded was abundantly demonstrated during our short stay with him by his large following of trusting friends, the good work which we saw him do and by glancing over the carefully selected books in his library.

While we sat chatting early one morning in the doctor's snug little office, there was a knock at the door and the swarthy section boss entered, closely followed by a man with his left hand bound with a bandanna, from the dependent corner of which drops of blood were falling. We smiled inwardly and said to ourselves: "Now is our opportunity to see some cross roads surgery." After a few words of cordial and sympathetic greeting, the patient was asked to be seated and the doctor went quietly and quickly about his preparations for the care of the wound, first uncovering the hand to learn the extent of the injury. The hand had been caught in the hasty handling of a hand-car and there was an ugly, lacerated and contused wound of the palm, involving tendons, vessels and nerves of the ring and little fingers. A rubber sheet was produced and spread out upon the table, which served as operating table and gynecological chair in this simple office; a clean hand basin was placed upon the table, some crystals of washing soda thrown into it, and the basin filled with boiling water. As soon as the solution had sufficiently cooled, the injured hand was immersed and allowed to soak until other preparations were completed. A scalpel, a pair of scissors, two or three needles of different size, some tissue forceps and two pairs of snap-forceps were placed in a pan upon the oil stove, covered with hot water containing more of the sodium carbonate and boiled for several minutes. We had noticed that the doctor's hands were clean, that the finger nails were closely trimmed, and that the subungual spaces gave evidence of frequent attention; also that the hands were soft and not as brown as the doctor's face and neck, eloquent testimony that he knew the value of gloves. When everything else was in apparent readiness, he took from a jar of 5 per cent., a stiff brush, carefully scrubbed his hands and covered them with alcohol, and the work began.

The patient's hand was carefully scrubbed, not with soap, but with the soda solution in which the instruments had been boiled. These were now placed upon a clean towel and spread upon the table. After the hand had been soaked a few minutes in a solution of lysol the edges of the wound were carefully trimmed, partially detached masses of tissue were dissected out, bleeding was stopped by pressure and the occasional use of snaps, and the deep

proportions of the wound more carefully examined. It was found that two tendons had been drawn from their sheaths and one partially, another completely torn across. These were carefully adjusted, the torn ends approximated with fine catgut sutures, the catgut having been sterilized by the doctor himself, as he afterward told us, by boiling in alcohol. The wound was then adjusted with greatest nicety with silkworm gut sutures, the hand dressed with borated absorbent gauze, and placed upon a Palmer splint.

The next day we drove together into the country in answer to an ordinary call, the messenger simply saying that Farmer Hicks was ill. Upon arriving we found a case of well-developed appendicitis, which evidently called for an early operation. When our friend had so pronounced and explained in simple terms the nature of the trouble, the patient simply replied: "All right, Doc, you know best and we know you'll do what's right."

Immediately the same simple preparations were made that we had witnessed in the office, save that a number of towels and soft clothes were sterilized by boiling, to be used about the field of operation and for sponges.

When the patient had received a bath, all other preparations had been made and a clean bed prepared for his reception after the operation. The doctor proceeded with the chloroform himself, using an Esmarch inhaler and the drop method, and while the patient was gently yielding to the influence, he quietly instructed one of the good angels of the neighborhood who had been sent for in the hour of need, how to continue its use when he was otherwise engaged. When the patient was asleep the good doctor again sterilized his hands and the field of operation, by first scrubbing with soap and hot water, then with pure hot water, and finally with alcohol. The incision was quickly made, the bleeding vessels twisted, the peritoneum opened, the inflamed and swollen, almost necrotic, appendix brought to the surface, cut off, the stump invaginated and sutured, and the abdominal wound closed with a small gauze drain.

These two operations were performed with as true a regard for asepsis, as if they had been done in the tiled operating room of the most modern hospital and with as perfect results, as subsequent events proved, yet how simple the outfit and the preparation! But the secret of such work lies in the man and the elements of such success are a knowledge of the latest facts of our science and the genius and courage to apply them.

Mississippi Valley Medical Association—Meeting at St. Paul, Minn.

The following letter has been received from the secretary:

St. Louis, July 30, 1896.

My Dear Doctor:

I desire to announce to you that the date of the meeting of the Mississippi Valley Medical Association has been changed to September 15-16-17-18, in order to permit the members and their families to take the opportunity accorded by this change to make a pleasant tour through the Yellowstone Park, so justly celebrated as the Wonderland of America.

Prominent resident members of our association in St. Paul and Minneapolis are formulating plans for the special Yellowstone Park excursion trip, to leave on the evening of September 18, arriving in Mammoth Hot Springs in the Yellowstone Park about noon on the following Sunday, and devoting the following five days to the wonders of this remarkable region, returning to St. Paul, Sunday, September 27.

The cost of the trip, including all expenses west of St. Paul, will be announced in due season, but we are authorized to say that the figure will be a very favorable one, and we simply wish at this time to make the preliminary announcement of this most enjoyable feature of the St. Paul meeting, so as to give members the opportunity of making their plans in advance to join the party. It is desirable that there be a party of 100 or more, in order to obtain the benefit of the special train service in both directions.

It is urged that all members who desire to join the party should send their names to Dr. C. A. Wheaton, chairman of the committee on arrangements, St. Paul, at as early a date as possible. If you desire to read a paper before the meeting, please send to me the title at once.

Very truly yours,

HANAU W. LOEB,

3559 Olive St. (L.) Secretary.

Guy Patin recommends to a patient, "to have no doctor but a horse, and no apothecary but an ass."—Chesterfield.

"How do you find yourself, Mrs. Judy?" said a St. Bartholomew's surgeon, after taking off the arm of an Irish basket-woman. "How do I find myself? Why without an arm; how the d—l else should I find myself?"

Extracts and Abstracts.

On Some of the Limits of the Art of Surgery.

Delivered at the Forty-Seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

By N. Senn, M. D., Ph. D., LL. D.

Professor of Practice of Surgery and Clinical Surgery in Rush Medical College; Attending Surgeon Presbyterian Hospital; Surgeon-in-Chief St. Joseph's Hospital.

(*Concluded.*)

The art of surgery has its well-founded limits in the treatment of fractures of the skull. In my opinion, operative interference is absolutely indicated in fractures of the cranial vault under the following circumstances: 1. All open fractures, including gunshot and punctured fractures. 2. Depressed fractures attended by well defined symptoms caused either by the depression or intracranial complications. 3. Rupture of the middle meningeal artery with or without fracture of the skull. The use of the chisel or trephine is superfluous and often harmful in the treatment of subcutaneous fractures of the vault of the skull with or without depression, more especially in the case of children. The operation of trephining in the prevention of remote complications of fracture of the skull is often powerless, owing to the existence of visceral lesions which it can neither remove nor render harmless. The indiscriminate use of the chisel and the trephine in the hands of the inexperienced practitioner is fraught with danger and should not be encouraged by teachers and expert surgeons. Such teachings and practice are in conflict with the correct principles which should govern the true art of surgery. Brain surgery is of recent origin. It is in this department of the operative work of the surgeon that art has gone far in advance of the science of surgery. Cerebral localization and aseptic surgery have made it possible to treat a few intracranial lesions successfully by direct operative interference. Cerebral localization in its infancy and the minutest aseptic precautions do not absolutely protect against infection. A few years ago the columns of the medical press brought glowing accounts of the removal of brain tumors. Patients were exhibited at the meetings of different medical societies with enormous cranial defects and ghastly depressions marking the place from whence a large glioma had been removed successfully. Such cases aroused the most intense attention and interest at the time, but where are they now? Subsequent reports failed to appear, and an ominous silence remains regarding their ultimate fate. Many of the cases of tumor of the brain operated upon who never recovered from the immediate effects of the operation were never reported, and those who were fortunate enough to survive the fearful ordeal, after a longer or shorter interval joined the silent majority. One of the well defined limits of the art of surgery is the operative treatment of malignant tumors of the brain. Tapping and drainage of the lateral ventricles as taught and practiced by Dr. W. W. Keen may and undoubtedly will become in the future a useful and legitimate surgical resource in the treatment of inflammatory affections of that part of the brain, but so far it has not yielded encouraging results. When Lannelongue devised linear craniotomy for the liberation of the undeveloped, imprisoned brain in the skull of infantile idiots, his doctrine was received with open arms by many surgeons who occupy the front rank in the profession. The lay and medical press vied with each other in bringing before the general and medical public the wonderful results following the use of the trephine, chisel and rongeur forceps in opening the skulls of such unfortunate children. Many of these little innocents, of course, succumbed to the immediate effects of the operation, but this did not subdue the ardor of the surgeon, as he had been instrumental in transferring an object of pity to that happy home where microcephalus is unknown, and had relieved the family of a troublesome trust. Where are the cases that have been permanently benefited by the operation? Ask Lannelongue whether his hopes have been realized. I am free to confess that I have never been able to muster my courage to attack the skull of a poor, innocent and yet happy microcephic child, because I have always regarded the operation as useless in promoting brain development. The responsibility of the surgeon is not limited by the defective mental development of the child nor the importunity of the parents in demanding the operation at all hazards. The surgeon should stand guardian over such a charge, mindful of the limits of the art of surgery. Have we a right to estimate human happiness? The driveling idiot has many enjoyments and pleasures that you and I know nothing about. His responsibilities to God and man are limited, and his existence on earth is a long, happy dream, which only ceases when the soul leaves the imperfect body, and returns from whence it came, where mental distinction is unknown. The operative removal of inflammatory products from the cranial cavity and the brain has yielded the most satisfactory results, and constitutes one of the most important achievements of modern surgery. This part of cerebral surgery will reach perfection with the progress of cerebral localization, and should be encouraged and cultivated by all

who are desirous of extending the present limits of the art of surgery.

Surgery of the Chest.—Modern surgery has done much toward the alleviation and cure of injuries and diseases of the organs of the chest, but it is here also that we are confronted by well defined limitations of the art of surgery. The successful treatment of hydrothorax and empyema of the pleural cavity is the result of a better knowledge of their etiology and pathology, and an improved operative technique under strict aseptic precautions. Tapping of the chest for tubercular hydrops, followed by iodoform glycerin injection has done more for this class of patients than counter irritation and the internal administration of digitalis, squills, acetate and iodide of potassium. Free incision of the empyemic pleural cavity after resection of one or more ribs, followed by efficient tubular drainage, has become an established practice by almost universal consent. The treatment of chronic empyema with thickened pleura and collapsed adherent lung by Estlander's multiple rib resection or Schede's thoracoplastic operation has yielded brilliant results. The treatment of abscess of the lung by rib resection, free incision with the knife point of the Paquelin cautery and tubular drainage, has been the means of saving many a precious life, which, without the aid of the surgeon, would have been doomed to a premature death. With few exceptions this is about all that has been accomplished by the surgery of the chest. It is true that a few surgeons have been fortunate enough to cope successfully with a few affections of the heart and its serious investment, the pericardium. Tapping of the pericardium for serious effusion has become one of the established operations in surgery. A very few cases of pyopericardium have been brought to a successful termination by free incision and drainage. We are familiar with isolated cases in which bold surgeons exposed the heart by a free incision for the removal of a foreign body, or sutured a visceral wound, and their effort was crowned by success, but, on the whole, we are painfully conscious of the fact that the art of surgery has done very little toward the successful treatment of injuries and diseases of this organ. Many have been the efforts of surgeons to supplant the physician in the treatment of pulmonary tuberculosis, the results of such efforts are familiar to you all. In the very nature of things, such trespassing upon the legitimate field of the physician has been followed, without exception, by an ignominious failure. It is unfortunate, but true, that the surgical treatment of pulmonary tuberculosis by direct surgical intervention is beyond the legitimate limits of the art of surgery. Surgery has done very little during the last two decades toward a betterment of the treatment of penetrating stab and gunshot wounds of the chest. The careful surgeon knows that the hermetic sealing under aseptic precautions of the wound of entrance and exit, if such exists, affords the greatest degree of safety in arresting hemorrhage and in preventing septic complications. Free incision of the cavity of the chest with a view of arresting hemorrhage by ligature, or tamponade from any of the organs which it contains is attended by such great immediate risks to life that the possible benefits to be derived from it are more than overbalanced by the immediate dangers which attend such an aggressive course of treatment. The removal of malignant tumors of any of the organs of the chest is beyond the present limits of the art of surgery.

Surgery of the Abdomen.—For reasons that we do not require an explanation here, the abdominal cavity was largely a terra incognita to the surgeon of less than half a century ago. To-day it is the favorite battle-ground of the average surgeon, and the select field of the so-called abdominal surgeon.

The bold surgery of to-day upon the organs of the abdominal cavity is largely due to the comparative safety with which the peritoneal cavity can be invaded under proper aseptic precautions. This new field for the display of surgical talent and ingenuity has been diligently cultivated in a legitimate way by the honest progressive surgeon, but it has also been made the playground of unscientific sensational surgery by men who are ignorant of the legitimate limits of the art of surgery. The simple fact that any of the abdominal organs, in part or in whole, can be removed successfully without much danger to life does not establish the legitimacy of the surgical procedure. Billroth, one of the greatest and certainly one of the most honest surgeons of this age, did not realize the expectations he entertained in regard to the benefits to be derived from direct surgical intervention in cases of carcinoma of the stomach, justifying surgical interference. Notwithstanding the wonderful improvements in the technique of operations upon the stomach, partial gastrectomy and pylorectomy have yielded anything but encouraging results. In nearly 50 per cent. the patients subjected to radical treatment for malignant disease of the stomach succumbed to the immediate effects of the operation. In all of the cases which survived the operative ordeal, the patients succumbed to a relapse in from a few months to several years. I have opened the abdominal cavity for the surgical treatment of malignant disease of the stomach, nineteen times, and only in one case did I find the disease limited to the organ primarily affected, and in this case

the general health of the patient had been so much deteriorated by the obstructive pyloric carcinoma as to contraindicate a radical operation, in all of the remaining patients a pylorectomy or partial gastrectomy was out of the question, as the carcinoma of the pylorus or stomach had extended to adjacent organs or had given rise to regional infection through the lymphatic glands sufficiently to contraindicate any attempt at radical removal of the disease. The legitimate limits of the art of surgery in the treatment of malignant disease of the stomach embrace the cases in which a sufficiently early diagnosis can be made when the malignant disease is limited to the organ primarily involved and the strength of the patient is adequate to overcome the immediate effects of the operation. The removal of the carcinomatous pylorus or any part of the stomach after the malignant disease has extended to adjacent organs or after regional infection through the lymphatic glands and channels has taken place is tampering with the present limits of the art of surgery. The palliative operations for carcinoma of the cardiac and pyloric extremities of the stomach have yielded excellent results, and should receive the sanction of every surgeon who has the best interests of his patient at heart. Witzel's operation for establishing an external gastric fistula in cases of malignant obstructive tumors at the cardiac orifice of the stomach, and Rockwitz-Wölfler's operation for pyloric carcinoma are the palliative operations which promise the most with the least immediate risks to life in all cases of malignant tumors of the stomach which give rise to obstruction. The treatment of intestinal obstruction by surgical intervention has become an established custom. Physicians and surgeons imbued with a proper moral and scientific sense, recognize the importance of early surgical interference in all cases of intestinal obstruction due to mechanical causes. An early positive diagnosis is an essential prerequisite to success in such cases which must be followed by prompt action on the part of the surgeon. Intestinal surgery will celebrate its greatest triumphs with the progressive development of our diagnostic resources in the early recognition of the nature and location of the mechanical causes which give rise to intestinal obstruction. Volvulus and invagination, some of the most serious forms of mechanical obstruction, if they could be recognized within a few hours of their appearance and subjected to surgical treatment at once would no longer figure so conspicuously in our mortality reports. The division or excision of a constricting band in the treatment of intestinal obstruction from such a source, if performed in time, would yield a very small mortality, but if not brought within the present limits of the art of surgery, such cases seldom recover from the immediate effects of the operation.

The radical treatment of malignant tumors of the intestinal canal has not been attended by satisfactory results as a rule. In the majority of cases the operations were postponed until the malignant disease give rise to symptoms of obstruction, when it was usually found that the carcinoma had passed beyond the legitimate limits of a radical operation. The implication of adjacent organs and extension to the lymphatic glands of the mesentery must be recognized at the present time as positive contraindications to a radical operation. With few exceptions the transgression of this rule in cases in which the patients survived the immediate effects of the operation was followed by an early recurrence of the disease to which the patient rapidly succumbed. Palliative operations in cases of malignant obstruction of the intestinal canal above the rectum, by establishing an anastomotic opening between the intestines above and below the obstruction, have become recognized procedures in surgery. In establishing such a communicating opening, the employment of mechanical devices, such as the metallic buttons of Murphy, Ramaugé and Chaput, which must pass the intestinal canal unchanged, is a procedure fraught with more or less danger, which is being recognized more as the experience with them increases. In my own practice I have largely dispensed with the perforated decalcified bone-plates, and now rely more frequently on the needle and thread in performing such operations, and the mass of the profession is in accord with this practice. The custom followed by many American surgeons to remove the appendix in all cases in which a diagnosis of appendicitis is made, is a very harmful one. The removal of the appendix should be limited to those cases in which, during the first attack symptoms arise which portend danger to life and relapsing appendicitis. Some cases of appendicitis yield to medical treatment, and in a large percentage of such cases the patient remains free from a second attack. Pancreatic surgery at the present time is limited to the treatment of cysts by establishing and maintaing an abdominal fistula until the cysts become obliterated. The extirpation of pancreatic cysts and partial pancreatectomy for malignant disease are operations fraught with danger, and do not come within the legitimate limits of the art of surgery at the present time. Much has been done of late in the way of developing and enlarging the sphere of the surgery of the liver and biliary tracts. Recent clinical experience and the results of experimental research have shown that a considerable portion of the liver can be removed for injury or

disease with a fair expectation of success. The treatment of gunshot and stab wounds of the liver by laparotomy and suturing or tamponing of the visceral wound has yielded encouraging results. A number of successful cases of excision of isolated adenomatous tumors of the liver have enriched and graced our modern surgical literature. The operative removal of malignant tumors of the liver is an undertaking far beyond the present limits of the art of surgery. The successful treatment of abscess of the liver and echinococcus cysts by direct surgical intervention is generally recognized as one of the greatest achievements of abdominal surgery. The pioneer work of Sims and Kocher in laying the foundation for a rational treatment of impacted gallstones in any part of the biliary tract has yielded unexpected results, and has been the means of saving thousands of lives by averting the dangers from perforation and cholemia by a timely surgical intervention. The removal of calculi from the gall bladder can now be accomplished with very little danger to life. The cystic and common duct the seat of an impacted calculus are now exposed and incised, the calculus extracted and the wound sutured or drained, with a well-founded hope that the patient will recover, and that the operation will result in restoring the free flow of bile through the biliary passages. I have reason to believe, however, that the surgery of the biliary passages has been carried too far. That unnecessary operations have been performed upon the gall bladder and the biliary ducts, no one will deny. The simple fact that the patient is suffering from gallstones does not furnish a positive indication for surgical interference. The physician and nature's resources should be given a chance, and the surgeon's services should be limited to those cases in which positive indications for operative treatment present themselves. The surgeon who recorded the first successful case of cholecystotomy has since become the victim of gallstones, but instead of calling upon one of his colleagues to open the gall bladder and remove the stones, he made a pilgrimage to Carlsbad and was promptly relieved of his sufferings. Cholecystenterostomy should only be performed in cases in which the common bile duct is permanently occluded by an impacted irremovable gallstone or cicatricial stenosis. Catheterization of the cystic and common bile ducts preceded or followed by dilatation by the use of laminaria tents in the treatment of impacted stones and cicatricial stenosis after the formation of a gall bladder fistula is a much neglected part of the surgery of the biliary passages and of sufficient importance to invite new trials and investigations. For substantial reasons abdominal nephrectomy and nephrotomy have been supplanted by lumbar operations. The treatment of tubercular hydrops of the peritoneum by incision, drainage and iodoformization remains in favor with the profession, and continues to yield the most satisfactory results.

Organs of Generation.—The greatest onslaught of modern surgery has been upon the organs of generation, male and female. It is somewhat strange that the organs created for distinguishing the sex and for the increase of the human species should have been singled out as innocent objects of so-called modern aggressive surgery. The future historians who will record the work of many gynecologists belonging to the present generation will have reason to express their surprise at what disasters the art of surgery has produced when plied in cases far in advance of a scientific foundation. Here and there we hear a feeble voice protesting against the indiscriminate surgery upon the organs of generation of the opposite sex, but the mutilating work continues in spite of such opposition and well-meant advice. Every competent and honest gynecologist knows that in his sphere the art of surgery has been thoroughly abused. It is difficult to assign tangible reasons for such a fearful state of things. It appears to belong to the spirit of the present generation, the outcome of ceaseless unrest in pelvic surgery. When I arraign the gynecologists before this body composed of representative medical men of this country for innumerable and inexcusable transgressions of the rules which ought to govern and control the art of surgery, I do not include the scientific, honest, conscientious workers in that department of surgery, but my remarks will apply to a class of routine operators which has recently grown to alarming dimensions not only in this but in nearly every country which has been penetrated by the dim rays of so-called bold surgery. It is a subject that I would gladly pass over in silence, but you have imposed upon me a trust which I cannot ignore and I stand here in the capacity of the conservative element in these days of wild, unfounded surgery to place myself on record in protesting against the unnecessary mutilation of the sexual organs of either sex, willing to stand or fall by the sentiments of the great mass of general practitioners, which after all, must be regarded as the backbone and final tribunal of our profession. The new generation of doctors finds no longer satisfaction in practicing their profession in some rural district. The young practitioners have their eyes on large cities and have heard of enticing fees paid to specialists for insignificant operations. Why buy a horse and saddlebags when a fortune awaits them in devoting themselves to a specialty, more particularly gynecology? The recent graduate or the man who has become

disgusted with country practice seeks a much employed gynecologist, follows his work for a month or two and returns to his prospective field of labor a full-fledged specialist. He is now ready to extirpate the uterus, remove ovaries and Fallopian tubes, sew imaginary lacerations of the cervix and perineum. Do you suppose that such an aspirant for gynecologic fame ever examines a woman and finds her perfect? Is it not true that in nine out of ten cases he finds something to mend? That my views are real and not visionary, let me relate a few instances. A number of years ago a young lady accompanied by her grandmother applied to me for treatment for a neurasthenic affection. I was informed by the grandmother that a few days before they had consulted a young gynecologist, who made a hasty vaginal examination, looked wise and informed them that he had found the source of all trouble in the form of a laceration of the cervix, which would require an operation. As a matter of course the grandmother asked for an explanation of the injury and was promptly informed that it was one of the common accidents of childbirth. As the patient was unmarried and had never been pregnant this explanation proved unsatisfactory to the interested parties and no arrangements were made for the prospective trachelorrhaphy—upon a virgin uterus. Not long ago an unmarried woman came under my care who had been told by an ambitious gynecologist that she was suffering from a myoma of the uterus which would necessitate a vaginal hysterectomy. I found a sharp anteflexion, the anterior wall of the uterus being prominent and somewhat edematous had been mistaken for a tumor and nothing short of a hysterectomy would satisfy the operator. This patient recovered under conservative treatment without the loss of an important organ. The cases which I have just cited escaped mutilating operations by doubting the diagnosis of those to whom they first applied for treatment; others are less fortunate. Suffering women will believe in and submit to almost everything. In fact it has become almost a fashion for a woman suffering from real or imaginary affections of the genital organs to consult a gynecologist as regularly as her dentist or dressmaker. Not long ago a girl of 18 years of age was brought to me with the information that she became epileptic when 7 years of age, that later, when menstruation was established, the attacks never occurred during the menstrual period, and yet both of her ovaries were removed by a gynecologist. As could be expected, the epilepsy remained and when I saw her she was on the verge of insanity. Time does not permit to cite additional illustrations showing criminal trespass upon the legitimate limits of the art of surgery in the treatment of real or imaginary ailment of the female organs of generation. Every practitioner has seen such instances as I have cited above. Has humanity been the gainer since the gynecologists became surgeons? This is a timely and serious question. Is the average woman who has passed through the hands of one or more gynecologists physically and mentally in a better condition than our mothers of fifty years ago whose ovaries were safe and who knew but little about speculums and vaginal douches? Let the older members of our association answer this question. When the venerable and distinguished Emmet devised this operation for laceration of the cervix he pointed out clearly what conditions called for and were benefited by trachelorrhaphy. The operation was received with enthusiasm and everyone present here knows how much it has been misapplied. It is safe to assert that not one in ten cases that have been operated upon was the operation justifiable or proved of any benefit to the patient. Emmet's teachings and practice were in consonance with sound pathologic principles, but hundreds of imitators were less discriminating in the selection of cases, and performed the operation simply because they found a laceration of the cervix, irrespective of the existence of symptoms which could be referred to this condition. Laceration of the perineum is another favorite subject of the "amateur" gynecologist. The extent of laceration and the symptoms caused by it are not always taken into careful consideration in deciding upon the propriety of an operation. To "do a perineum" in five to seven minutes still serves as an attraction for the lookers-on in many private hospitals and gynecological clinics. I fully appreciate the value of a well-performed perineorrhaphy in proper cases, but I am equally well satisfied that the operation has often been performed unnecessarily, and that it requires more than five or seven minutes to perform it properly. The late lamented Robert Battey opened a wide field for operative gynecology. This modest, honest worker conceived the idea that the removal of the normal ovaries would become a useful surgical resource in the treatment of certain nervous affections which before had baffled the skill of physicians. It required some time and the additional support of Hegar and Tait for his views to become popular among his colleagues. Battey lived long enough to learn that his example and teachings have created a wave in the misapplication of the art of surgery which to-day remains mountain high, and it is difficult to tell where it will end or where a rock sufficiently high and strong will be found to break its force. The frequency with which women are being castrated to-day is one of the most

flagrant transgressions of the limits of the art of surgery. It is not unusual for one operator to exhibit from five to six normal ovaries as the result of half a day's work. All kinds of excuses are made for this kind of surgery. The ovaries are too large, cirrhotic, cystic, or perchance a ruptured Graafiian follicle is discovered, when he consoles himself that he has removed an apoplectic ovary. Where is this wholesale unsexing of our female population going to end? The beginning of the end has come. The army of women minus their essential organs of generation is beginning to raise its voice against such mutilating work. The number of women who willingly sacrifice their ovaries to restore their shattered health without securing the expected relief has increased to an alarming extent. This sad experience has made the gynecologists more desperate and bold. They have been importuned by their castrated, tubeless patients to such an extent that the art of surgery was again resorted to. The uterus, which heretofore had been comparatively safe, was now selected as the offending body, and vaginal hysterectomy became at once a popular operation. Many atrophic uteri remaining after removal of their appendages have been removed in a vain hope of securing permanent relief. Vaginal hysterectomy for diseases other than carcinoma is now at its height. The uterus is being removed for hypertrophy, endometritis, flexion, version and minute myofibromata. This important organ is no longer safe if it is in the vicinity of a pelvic abscess. Perchance a healthy uterus is removed under the pretense of securing a more direct route to a focus or foci of pelvic inflammation. It is needless to say that most of the surgeons who clamor for the removal of the uterus through the vagina for insignificant affections or inflammatory lesions of adjacent parts, do so by the use of compression forceps. It is no great surgical feat to squeeze out an inflamed or displaced uterus between compression forceps. It is difficult to say where this rage for the removal of the female sexual organs will end or what organ will be the next battle ground for the aggressive gynecologist. The clitoris, the vagina, the cervix uteri, the ovaries, the Fallopian tubes, the uterus and its ligaments have successively passed through a trying ordeal of the furor operativus. What the next fad will be is impossible to foretell. As one operation after another is falling into a well-deserved desuetude new ones will have to be devised to gratify the whims of the patients and the ambitions of the gynecologist. I have portrayed to you only a few of the excesses of the art of surgery as applied to the female organs of generation, but enough has been said to show you that it is time to call a halt. Further depredations can best be avoided by the general practitioners to whom most of the patients apply for relief. Let them do their duty toward their patients. Many of the minor affections of the uterus and its appendages are within the reach of intelligent general and local treatment without a recourse to the knife. If gynecology is to live and become a real benefit to women suffering from pelvic disease, it must become more conservative. We all appreciate what surgery has done in prolonging life and in mitigating suffering in the treatment of ovarian cysts and the removal of the uterus, the seat of symptom-producing myofibromata. What I am objecting to, and on good ground, is the indiscriminate operating upon the female organs of generation for imaginary or insignificant affections. This is an evil that must be apparent to all and that the leaders of gynecology must assist us to suppress.

I cannot dismiss the subject of genital surgery without making a strong plea in favor of conservatism in the treatment of prostatic hypertrophy. A few years ago J. W. White made a series of experiments on dogs which proved that the testicles possessed an influence which, to a certain degree, controlled the nutrition of the prostate gland. His experiments were made on dogs, the animals being vigorous and in full possession of their sexual power. He found that castration was constantly followed by progressive atrophy of the prostate gland. At that time he timidly suggested that castration in cases of prostatic hypertrophy might possibly prove to be a valuable surgical resource in the treatment of uniary obstruction due to such a cause. About the same time Ramm gave the result of his clinical experience, covering about the same ground, urging the utility of castration as a legitimate surgical procedure in the treatment of non-malignant obstructive enlargement of the prostate,. a condition so frequently met with in men advanced in years. You are familiar with the subsequent history of this operation. Numerous operations have been performed in different countries which appear to support the claims made for it by both of these investigators. The operation has been modified in substituting for the castration section or resection of the vas deferens, and recently neurectomy of the spermatic nerves; both of these procedures are said to produce the same curative effect as castration. A sufficient clinical material has accumulated to prove that these different procedures frequently result in diminution in the size of the prostate and that the symptoms caused by the obstruction often diminish or disappear.

I can readily understand in what manner emasculation in young animals and young and middle-aged men should be followed by atrophy of the healthy prostate gland. Cas-

tration of women during active sexual life will bring about atrophy of the uterus as a constant result. Clinical experience has also shown that the anticipated menopause effected by castration has a decided effect on the myomatous uterus. But who would think of castrating a woman who has reached the menopause for such an indication? It is very difficult to understand how castration or its substitutes performed on men advanced in years, with atrophic dormant testicles should exert such a positive influence upon an organ, the seat of senile affection And yet, the fact remains that many reliable men have observed such results, and we can no longer doubt them

What I fear, and the reason I allude to this subject, is this, that castration of aged men for hypertrophy of the prostate, when this operation becomes common property and is endorsed by surgeons who stand high in the estimation of the profession, will be misapplied in the same way, fortunately, probably to a lesser extent than the removal of normal ovaries. Men will be castrated for stone in the bladder, chronic cystitis and malignant disease of the bladder. It is not always easy nor possible to make a positive differential diagnosis between simple hypertrophy of the prostate and some of the conditions which simulate so closely. In doubtful cases it appears to me it would certainly be advisable to make the diagnosis sure by a supra-pubic cystotomy before resorting to a mutilating operation, rather than remove the testicles and later discover a tubercular bladder or encysted stone or malignant disease of the bladder or prostate. Castration is such an easy operation that every tyro in surgery will be tempted to perform it upon willing subjects suffering from obscure affections of the bladder, complicating hypertrophy of the prostate gland. The Ramm-White operation deserves a fair trial at the hands of competent surgeons, in well-selected cases, but I apprehend evil in the future, not so much from the proper use as the abuse of this procedure. In short, it is probable that this new surgical resource, which has not yet passed the trial stage of a legitimate established surgical procedure, will on a smaller scale become a repetition of the unenviable history of castration of the opposite sex. We have every reason to believe that so far the apparently successful cases have found their way into current medical literature, while the cases in which the operation has proved a failure, with few exceptions, have for apparent reasons not been published.

Gentlemen: It has been my purpose to call your attention in the brief time allotted to the delivery of this address to some of the limits of the art of surgery and to a few of the most flagrant prevalent trespasses of its legitimate limits by undiscriminating surgeons. I wish time would permit me to say something of the too frequent recourse to the recently revived operation of symphyseotomy and the unwarranted procedure known as Porro's operation, except in cases in which the uterus is the seat of a life-threatening affection, some of the evil results following the too frequent performance of ventro-fixation of the retroverted uterus, and many other topics in general surgery and gynecology to which no allusion has been made, where the limits of the art of surgery have been ignored, and too often reckless operating has disgraced the fair fame and reputation of our noble profession. Let us have in the future more of the nil nocere in place of the furor operativus. I have written and delivered this address with malice toward none, in the interest of the suffering portion of our population, for the true advancement of the science and art of surgery, and as a plea for recognition of the good work done by the great mass and backbone of our profession, the modest, toiling, inadequately remunerated general practitioner.—Journal of American Medical Association.

(429) Changes in the Spinal Cord After Amputation of Extremities.

Grigoriew (Zeit. f. Heilk., vol. xv, p. 75) investigated 2 cases of amputation of the arm, 2 of amputation of the thigh, and 1 of amputation of the leg. The period elapsing between operation and death varied from twenty years to 1 year. The results of his investigations agree with those of the greater number of authorities, and are collected by the author in the following summary: In all cases excepting that in which one year elapsed before death, deviations from the normal appearance of the cord were noticed; in all cases they were analogous, affected the corresponding portions of the cord, and consisted in a simple atrophy of certain portions of the grey and white substance differing in the cases only by the degree of development. The simple atrophy of the nervous elements of the cord was greater as the period elapsing between amputation and death was greater, less as it was less; while in the case in which the period was only one year, atrophy was completely wanting. With reference to the relative time before the separate paths and portions of the cord became degenerated, the author found his cases in agreement with those of other authors, and with those obtained by experiment on animals, namely, that the atrophic phenomena appear earlier and are more marked in the sensory than the motor areas of the cord.—British Medical Journal.

Miscellany.

Traumatic Neurasthenia.

At a recent meeting of the New York Neurological Society Dr. C. E. Nammack presented a patient, a policeman, who, on October 12, 1892, had attempted to stop three runaway horses, attached to a steam fire engine, in the Centennial parade. He was successful in this, but although not physically injured, he received a profound psychic shock. One week later it became necessary for him to seek medical advice, for the relief of pains in his chest. On the advice of Dr. C. L. Dana he went abroad, and remained there from June, 1894, to October, 1895. He had been perfectly well up to the time of this accident, and his family and personal history were excellent. He remained on police duty for some time, but found himself unable to attend to his work, even though his promotion to the rank of roundsman had rendered this less monotonous than formerly. The first symptoms noticed were diminished power of persistent application and nervous irritability. Mental exaltation then became marked, and insomnia became most distressing. Hyperæsthesia and paræsthesia were noticed. The principal subjective symptoms were pain over the heart and dyspnœa, on exertion; profuse sweating and insomnia. Examination recently showed the pain and temperature senses normal, tactile sensibility impaired, and hyperæsthesia wanting. Both visual fields showed the shifting type of contraction. Color perception was fairly good. There was no motor weakness of the eyes and no abnormal pupillary reaction. Smell and taste were not affected; station and gait were good; there was some tremor of the hands. The knee jerks were slightly exaggerated. The heart action was weak and greatly accelerated by walking; there was no enlargement of the heart or valvular disease. Slight irritation of the skin led to persistent redness. His weight had fallen from 220 to 175 pounds. Micturition was not vigorously performed. The urine was normal. The sexual desire was weak, although the power was good. The diagnosis in this case, the speaker said, lay between traumatic neurasthenia, traumatic hysteria and simulation. The last was excluded by the absence of motive, of striking symptoms and of efforts to exaggerate slight symptoms. Hysteria was excluded by the absence of anæsthesia, contractures, spasms, etc., and of paroxysmal phenomena. The patient had had the benefit of skilful treatment, and improvement had been slow but steady. Apparently, hydro therapy had benefited the patient the most. The case was interesting, as being free from the usual complications arising from prospective lawsuits.

Dr. C. L. Dana said that when he saw this case he made the diagnosis of traumatic neurasthenia. The case was an interesting and typical one, and was chiefly of importance on account of the absence of the complications referred to.

Dr. Nammack, in closing, said that formerly considerable stress had been laid upon the condition of the visual fields as a differential point between traumatic neurasthenia and hysteria, but that now this had been pretty much abandoned.—Journal of Nervous and Mental Diseases.

Roentgen Rays in Internal Medicine.

Huber, of Leyden's clinic (Deut. med. Woch., March 19, 1896), remarks that in various swellings of the joints it may be impossible to ascertain by palpation whether the changes lie in the joint ends, in the cartilages, or in the soft parts. Case I: A man, aged 31, had a third attack of rheumatism. He had also had several attacks of gonorrhœa, from one of which he was still suffering. The photograph showed distinctly the swelling of the soft parts about the metacarpo-phalangeal joints of the middle and index fingers, and also about the first phalangeal joints of the second and especially the third fingers. No change was visible in the bones. Case II: A woman, aged 41, had suffered from chronic rheumatism for two years. At first it was limited to the small joints of the hands; later the elbow, shoulder, knee and ankle-joints were affected. Here the photograph showed that, although the rheumatism had existed for two years, there were no anatomical changes in the bones of the hands. Under treatment she improved considerably. Case III: A man, aged 49, had suffered for three or four years from painful swellings in the fingers, due to gout. The photograph showed lateral outgrowths and irregular thickenings in the ends of the bones. In the terminal phalanges a streaky appearance was visible, due in all probability to the deposit of lime salts. Case IV: A girl who had a poisoned wound of her hand three months previously had a thickening about and loss of movement in the first phalangeal joint. The photograph explained the failure of past methods of treatment and the need of surgical assistance. The last photograph was from a patient who had suffered from gout for thirty-eight years previously. It showed (a) large gouty nodules beneath the skin, and apparently in connection with the joints. These deposits of uric acid allow the rays to pass through fairly well. (b) Great changes and destruction in the joints, and (c) destruction of the bone.

In the terminal phalanx of the ring finger it would appear as if there were a cavity surrounded by a thin wall only, the cavity being probably filled with uric acid. The removal of the uric acid in this case, either by absorption or otherwise, could only render a hitherto useful hand quite useless.—British Medical Journal.

The Fees of Medical Witnesses in Great Britain.

In Scotland, medical witnesses receive two guineas for each day they are cited to appear in the circuit court of the town in which they are residing and three guineas if the court is held at a distance. There are also allowances for traveling and other expenses. In England and Wales the fee is one guinea per diem, one round trip railway fare, and an allowance of two shillings per night. If the court is held in the city in which the witness resides, there are no allowances beyond the guinea a day. The association of police surgeons of Great Britain and Ireland is agitating the question of demanding larger fees for witnesses. It recently requested the home secretary to receive a delegation to confer with him on the desirability of revising and increasing the present scale of fees, but he declined to discuss the question, seeming to think that $5 a day was good enough pay for a docter.—Medical Record.

One of the interesting characters of the fourteenth century was the sergeant surgeon of Edward III., in 1346, John of Arden. He gives a "Description of ye qualites which ought to be in ye surgeon that performeth any operation in chirurgery:

"First, that he be devout.
Secondlie, charitable to ye poor.
Thirdly, to use few words.
Fourthly, to avoid drunkenness.
Fifthly, to be chaste both in words and gestures, as well as to fear ye not.
Sixthly, not to undertake an incurable disease."—Medical News.

We have received the following from the secretary of the Marion-Sims College of Medicine of St. Louis: Whereas, Dr. I. N. Love has found it incumbent on him to sever his connection with the Marion-Sims College of Medicine, the members of the faculty of that institution embrace this occasion to express their appreciation of his past services, and to extend to him their hope that in all his future connections he will find both pleasure and profit.

C. Barek.
R. C. Atkinson.
B. M. Hypes.
Committee.

Notices and Reviews.

Obstetric Accidents, Emergencies and Operations. By L. Ch. Boisliniere, A. M., M. D., LL. D., Philadelphia: W. B. Saunders, 1896.

The author sets forth in his preface that "this book is not a treatise on midwifery nor a manual of obstetrics," but that "it is intended for the use of the practitioner, who, when away from home, has not the opportunity of consulting a library or of calling a friend in consultation."

The work is far from being what the author intended. In the first place, it contains too much that belongs more properly to a treatise or manual, and which would be of little value or interest to one seeking help in an emergency. This unnecessary padding makes the volume too bulky to be conveniently used as a working guide. On the other hand, to one requiring assistance, when away from library and friends, the book would prove, in most instances, a disappointment. There is a serious lack of explicitness in giving the details of treatment, whether operative or otherwise, and the author's meaning is not always clear. The avowed object of the work is lost sight of at times, as, for instance, when the writer insists that where surgical anæsthesia is necessary "chloroform must be administered by a reliable medical assistant," and when he urges that in all bloody operations one or two able colleagues be called in consultation. In the treatment of abortion one is advised to do nothing aside from the use of ergot and the tampon, until "bad symptoms" show themselves, because under certain conditions the ovum or placenta may be retained for months or years without danger. According to the author, incomplete perineal lacerations, that is, those beginning at the vulva and not involving the anal splincter, "do not require any particular treatment, as they heal spontaneously," which is quite at variance with the teachings of the majority of obstetricians. The author emphatically declares that the killing of an unborn child, in order to save the mother's life, is never justifiable, at any stage of uterogestation. He deplores the wanton "slaughter of the innocents" in cases of uncontrolable vomiting of pregnancy, and in cases of tribal or abdominal gestation.

The book is well printed and is profusely illustrated, to a large extent with Dr. Dickin-

son's beautiful cuts, reproduced from the American Text Book of Obstetrics.

L. H. P.

BOOKS AND PAMPHLETS RECEIVED.

"The Technics of the Trial Case; or, Subjective Optemetry," by A. Edward Davis, A. M., M. D. Reprinted from the New York Medical Journal for June 20, 1896.

"Fetal Hiccough," by Jos. B. DeLee, M. D. Reprinted from The Chicago Medical Recorder, August, 1895.

"Three Clinical Obstetrical Studies," by Jos. B. DeLee, M. D. Reprinted from The Chicago Medical Recorder, May, 1896.

"Salivary Calculi," by Gustav Fütterer, M. D. Reprinted from Medicine. Geo. S. Davis, publisher, July, 1896.

"A New Method of Treating Pneumothorax," by Gustav Fütterer, M. D. Reprinted from Medicine, June, 1896.

"Sponge Grafting in the Orbit for Support of Artificial Eye," by E. Oliver Belt, M. D., of Washington, D. C. Reprinted from The Medical News, June 27, 1896.

"The Diagnosis of Hysteria," by Hugh T. Patrick, M. D. Reprinted from the New York Medical Journal for February 15 and 22, 1896.

"The Conservative Use of the Stomach Tube in the Treatment of Gastric Diseases," by J. M. G. Carter, M. D. Reprinted from the Journal of the American Medical Association, June 15, 1895.

"Is the Disturbed Equilibrium of the Eye Muscles a Cause of Headaches and Other Reflex Neurosis?" by F. C. Hotz, M. D. Reprinted from the Chicago Medical Recorder, April, 1896.

"Ulcer of the Stomach," by J. M. G. Carter, M. D., Waukegan, Ill. Reprinted from International Clinics, Vol. IV, Fifth Series.

"Conservative Surgical Treatment of Para and Peri-Uterine Septic Diseases," by Fernand Henrotin, M. D. Reprinted from the American Gynæcological and Obstetrical Journal for June, 1895.

"Hypnotism," by Hugh T. Patrick, M. D. Reprinted from International Clinics, Vol. IV, Fifth Series.

"Sarcoma of the Choroid, Glioma of the Retina, and New Formed Blood Vessels in the Vitreous," by L. Webster Fox, M. D. Reprint from the Ophthalmic Record, Vol. 5, No. 8.

"Hydro-Galvanism of the Urethra," by Robert Newman, M. D., New York. Reprinted from Transactions of Electro-Therapeutic Association, 1895.

"The Extension Corset and Its Indications," by Alex. C. Wiener, M. D. Reprinted from the Journal of the American Medical Association, April 25, 1896.

"Present Status of Operative Treatment for Bladder-Stone," by Arthur Dean Bevan, M. D. Reprinted from Medicine, May, 1896.

"The Development of the Test Card," by Dr. Frederick K. Smith. Reprinted from the Cleveland Medical Gazette, June, 1896.

"Diagnosis of Hystero-Epilepsy," by Hugh T. Patrick, M. D. Reprinted from the North American Practitioner, July, 1896.

"The Experience of Several Physicians with Sero-Therapy in Tuberculosis," by Paul Paquin, M. D. Reprinted from the Journal of the American Medical Association, August 15, 1896.

"Tumors of the Eyeball," by William H. Wilder, M. D. Reprinted from the Journal of the American Medical Association, April 27, 1895.

"Paralysis of the Ocular Muscles," by William H. Wilder, M. D. Reprinted from the Chicago Medical Recorder, July, 1896.

A physician is an angel when employed, but a devil when one must pay him.—German.

I had reasoned myself into an opinion that the use of physicians, unless in some acute disease, was a venture, and that their greatest practicers practiced least upon themselves.—Sir W. Temple.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate; situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address "BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

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ONE FALLACY REGARDING UNUNITED FRACTURES, WITH REPORT OF CASES.*

BY E. R. LEWIS, A. M., M. D., KANSAS CITY, MO.

One year ago, at our annual meeting in Chicago, I had the pleasure of presenting a paper on the subject, "Ununited Fractures; Development and Repair of Bone." Since that time I have seen three cases of ununited fractures, that is, ununited in the ordinary acceptation of the term, as laid down by our best authorities on the subject—who say that after six months, a broken bone which has not been repaired by bone will not be capable of so doing—and is an ununited fracture and will continue so without surgical interference, and this is the point I wish to correct, and verify by my own experience in three cases seen since our last meeting. One of the three cases occurred in my own practice, and was under treatment at our last annual meeting, but not sufficiently advanced at that time to be discussed in the paper presented then. My patient was a male, 41 years of age, foreman of a crew at our live stock yards. While loading a New York stock train, one of the animals became unruly, and in attempting to force the animal into the car, it fell between the car and the platform, catching the patient's right leg between the edge of the heavy oak platform and the animal's body and not only fracturing the bones, but comminuting them, cutting the vessels and thereby producing an enormous subcutaneous hemorrhage. When I arrived at the yards and examined the patient, who was stretched out on the floor of the pen. I did not think it possible to get him home without the sharp fragments of bone making our injury a compound comminuted fracture,

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May 1, 1896.

but the police patrol wagon attaches proved quite skillful in the handling of the patient and he was laid upon his bed a mile away with the cutaneous tissue still intact, though exceedingly thin at more than one point, and enormously strutted with the homorrhage, which seemed to be still going on.

The idea of evacuating the blood was debated, but I feared to convert my injury into a compound one, so applied temporary splints for the first week, after which time I used a plaster cast, leaving it on for six weeks. At the end of that time I found no union. I again applied the plaster, after using some friction of the ends of the bones, leaving it on more than three months from the time of the original injury, and at the expiration of this long time found no union. After the removal of the first cast and the application of the second, my patient was up and around on crutches all of the time. I removed the second cast in the fourth month, and although the patient was around all the time, I used only light splints about the point of the non-union during the day, removing them at night, and finally leaving them off altogether as the limb got stronger and stronger under the daily use of massage. In fact, after the removal of the permanent splints, I had the patient submit himself to an expert masseuer almost daily for several months, before bony union occurred, which was about the last of the seventh, or the first of the eighth month; and now, after fourteen months from the date of injury, he is attending to his work in the live stock yards as before. Having a great desire to see what condition the bones were in, I availed myself of the great courtesy of Professor Lucien I. Blake of the University of Kansas to submit my patient to the Roentgen rays for the purpose of making a skiagraph of the leg. After the plate had been developed, I was delighted to be able to see continuous bony repair in both tibia and fibula.

The second case I saw for the last time during the year, proving that bone will repair itself with bone after six months, occurred in the practice of a member of the National Association of Railway Surgeons, the chief surgeon of the Kansas City, Ft. Scott & Memphis Railroad. The patient was injured in Arkansas in 1889 and was treated in the company's hospital in Kansas City during the year ending July, 1890. I saw this man with Dr. N. J. Pettijohn, the chief surgeon of the road, during the time he was in our town, and from the very extensive injury, did not at one time think the limb could be saved, even with a false joint, but as to the fallibility of my judgment, I leave you to judge after reading the history of the case, as kindly furnished me from the hospital records by order of the chief surgeon. The record showed the following, viz.:

"Charles W. Barton, fireman, aged 35, was injured September 24, 1889, by an engine leaving track and his right leg being caught in the debris, crushing the tibia and fibula at the junction of the middle and upper thirds, producing a compound comminuted fracture of the tibia, with a section of two inches of the fibula entirely removed. All of the anterior skin, muscles and vessels were crushed and extensively lacerated over the seat of injury. On the day after the injury the patient was brought to the General hospital at Kansas City, all of the loose fragments of bone removed, the ends of the tibia and fibula approximated and wired and the lacerated muscles adjusted with buried sutures, the limb dressed and placed in a side splint for six weeks, after which it was put in a permanent plaster of Paris splint, so arranged that the necessary dressings could be applied without interfering with the process of repair. (The wire sloughed out.)"

This patient remained in the hospital about ten months, being discharged July 17, 1890, without solid bony union, there being slight motion at the seat of injury. He was furnished with a shoe and lateral braces, which gave support to the limb, with instructions to use it as much as possible on crutches. Three months after leaving the hospital there was a solid bony union, and the limb is now as strong as the other, with the exception of two inches shortening. Thus it will be seen that after eleven or twelve months, this patient was rewarded by most complete bony union.

Our third case occurred in the practice of our fellow member, Dr. A. O. Williams of Ottumwa, Ia., and I here embody his report of the case, in the following letter, dated April 18, 1896, viz.:

Ottumwa, Ia., April 18, 1896.

Dr. E. R. Lewis, Kansas City, Mo.

Dear Doctor:—I consider that I owe you

an apology for not informing you long ago about my case of ununited fracture, insomuch as you took such an interest in the case and furnished such valuable suggestions. I am happy to say that the patient is now well and at work. I send you a history of the case. I shall surely be in St. Louis and shall be pleased to confer with you further.

Yours respectfully,

A. O. Williams.

The following is Dr. William's report:

"Wm. McKinney, aged 30, habits good, no constitutional or hereditary ailments and in good health, was struck, February 8, 1895, by an iron which was half of a hook used by the wrecking crew to pull cars out of the ditch. An engine was pulling on the rope, the hook broke, flew back, struck McKinney on the tibia at the union of the middle with the lower third, producing a compound comminuted fracture of the tibia and fibula. The fragments were adjusted two hours after the accident. Temporary splints were used for seven days, when the leg was encased in a plaster of Paris bandage. Seven weeks from the day of the fracture there was no union. The external wounds healed without supuration. At the end of 60 days there was union. The limb was again encased in plaster and the patient allowed to go around on crutches. The fracture was examined every few days. There was little progress toward union from one examination to another. Four months after fracture the leg was bandaged with a rubber band just below the knee joint, in order to obstruct return circulation. The ligation was kept up continuously for four weeks. Six months after the accident the patient was sent to D. E. R. Lewis of Kansas City, Mo., who recommended massage, which was followed persistently. The union rapidly became firmer, until nine months after the accident no motion was perceptible."

From the above it will be seen that Dr. Williams' patient was nine months without complete bony union. Taking the three cases, we have the earliest union in the eighth month, and the latest union after the twelfth month. In my patient there was no constitutional condition, such as tuberculosis or syphilis, to delay union, and so far as I have been able to judge, neither of these conditions complicated either of the other cases. I will not now enter into a discussion of the development and repair of bone, for in my Chicago paper I covered that ground so far as possible from my study and personal experience. For the most approved methods of operating upon ununited fractures, I refer to an exhaustive article by one of our members, Prof. N. Senn of Chicago in the Annals of Surgery for August, 1893.

DISGUSSION OF DR LEWIS' PAPER.

President Murphy: This is one of the most interesting topics that can come before the association, and I would like to have every member take an active part in the discussion.

Dr. Milton Jay, Chicago: The subject of ununited fractures is certainly one of great importance to railway surgeons. What is generally meant by ununited fracture is not that we have no deposit between the fractured fragments, or that we have no plastic lymph or fibrinous deposit in the periosteum. Notwithstanding the very interesting paper of Dr. Lewis, it is yet a question, if at the end of six months no bony lymph or fibrous deposit has taken place in the periosteum, whether we get bony union without boring the ends of the bone. We sometimes see delayed union where the periosteum, which makes the provisional callus, or which forms a band around the ends of the fragments of the bone, will admit of considerable motion between the fractured fragments. The definitive callus, by the circulation from the bony structures, performs a slight function in the union of bone anyhow. If Dr. Lewis could have seen between the ends of the bone, if he could have seen the condition of the periosteum, which lines the bone, and could have seen no deposit or any intention on part of nature to perform any kind of union, then I still doubt whether at the end of six months he would have union. This provisional callus on the outside is slow, particularly where there has been a compound fracture. However slow it may be, it continues where the plastic lymph is thrown out, so that slight pressure may cause constant irritation, increase the deposit of lymph, and the union of the fragments does not take place, but at the end of six months there was a deposit in the periosteum of provisional callus, which was afterwards absorved, yet it permitted of some kind of motion. If the motion was lateral, the entire thickness of the bones, he never would have had union unless he had sawed off or laid

bare the ends of the bone. The point I wish to make is that if at the end of six months there was no intention of nature towards bony union, I still doubt whether he would have bony union.

Dr. Crook: My excuse for trespassing upon the time of the Association is merely to report a case along the line of Dr. Lewis' paper. When I was an assistant surgeon to the Sacramento (California) Hospital, early in the spring of 1895, an Italian, 34 years old, presented himself with severe ankylosis of the knee-joint. After he had been in the hospital for a week or two and was properly prepared, I operated on him and broke up the ankylosis. In addition there was malposition of the femur, overlapping of the bone, and a shortening of the leg of three inches. He could not bear any weight on the leg. With Dr. White, superintendent of the institution, and assisted by the physicians in the hospital, I operated and removed two and a half inches of the femur. The ends were brought together and sutured with silver wire. The leg was then invested with plaster of Paris with a window on one side for drainage. The plaster cast was allowed to remain nine weeks, at the end of which time it was removed, but union had not taken place. We were very much discouraged. We waited for a week and the man complained of severe pain in the right side. An analysis of the urine was made and it was found to contain pus. A diagnosis of pyonephrosis was made, and a nephrectomy performed. The old wound in the leg was afterwards reopened, the wires taken out, the ends of the bone put together again, and the man was well at the end of five months.

Dr. S. S. Thorn, Toledo: I have had some experience with cases of delayed union. My observation is, that the most fruitful cause of delayed union is malnutrition. I took this ground once before in this Association. It is starvation. A little over a year ago I was in favor of anchoring such bones, but I have seen failures from efforts at wiring the fragments and have suggested to surgeons trying the plan advocated by Mr. Owen, of Liverpool, that is, to maintain fixation of the joints beyond the seat of fracture. In these cases, the ankle and the knee. This fixation is maintained by a trough of plaster of Paris, and the method was presented at our meeting in Chicago last year. Let your dressings be loose. That is another important point. After all the necessary preparations are made, turn as far as you can the ends of the bones, in this way make flexion, and pummel them well with the hammer, just as a man does when he is percussing, then put your thumb back into the cast loosely, maintain fixation of the joint, then let it alone. I did this in one case, and at the end of twenty-one days the patient came back and did not like it, at which time I removed the dressing, told the patient that he had better try this treatment for twenty-one days longer, which he did, and there were evidences of successful union. This process of pounding the tissues over the ends of the bones in this way has served me very successfully five or six times within the past five years. I have not wired bones for at least five years. Unless the most perfect precautions are taken, the operation is apt to be followed by unpleasant conditions. In one case an amputation was the only successful termination.

Dr. W. S. Hoy: I regret that I did not get here earlier so as to hear the excellent paper of Dr. Lewis. I understand the subject for discussion is ununited fractures. Dr. Thorn has forcibly struck the keynote of the causes of ununited fractures, and that is anemia of the parts. Very frequently the surgeon, when called to treat a fracture, places a bandage around the limb so tightly that the circulation is partially cut off, and as a result he has nonunion of bone. But the question is, how are we to obtain union in ununited fractures? Dr. Thorn does not believe in wiring the fragments. I do not believe in it. I believe friction does a great deal more than wiring will do. I have in three cases obtained good union, and a useful limb without any marked shortening. My method of treatment of compound fracture is simply to put on a light dressing. I believe the surgeon to-day makes a mistake when he puts on any fracture a cumbersome dressing. I think the more light, the more airy and simple the dressing is in all cases of fracture, the better will be the results in the end. It is a good rule, in the treatment of fractures, to confine the joints above and below the seat of fracture. I believe in immobility of the parts, and believe that rest is the great principle underlying the treatment of fractures in which there is delayed union. Perhaps some of you have

never tried decalcified bone, taken either from the bone of the ox or cow, slipping it over the fragments. I recall a case in which eight months had elapsed, and yet there was non-union. The physician in charge suggested that we cut down upon the bone and wire the fragments. He went to a dentist, who drilled six holes, three in each end of the bone. This was a fracture of the tibia. He then applied a plate made from a battered silver watch case. This patient, after eleven months, made a perfect recovery, union of the fragments being perfect. After the screws had become loose in their sockets in this case, the plate was removed and we found perfect union of the fragments, with healing of the external wound.

Dr. P. Daugherty: A few questions have occurred to me since this discussion has been going on. First, as to the causes of delayed union in ununited fractures. One cause has not been spoken of, and that is muscular tissue getting between the ends of the fractured bone. So long as that remains there we are not going to have union. There is a possibility that in the course of time this muscular tissue may become absorbed or disappear and that we will get union without any further trouble. There is one way by which we can nearly always tell whether we have a condition of that kind or not. If we take hold of the bone, force the ends of the fragments together, and we get crepitation we may be sure that there is nothing interposed between the fragments. If we get no crepitation we may be certain that something is interposed between them. Syphilitic, tubercular and anemic subjects from any cause are liable to delay union in cases of fracture.

As to the dressing of fractures, we have had suggested and recommended various dressings from time to time. Some thirty years ago I devised a method which I have used ever since. I was called to the southeastern part of Illinois, fifteen miles in the country, to see a man who had a fracture of the leg. This was in the days of the fracture box. There was no lumber, no saw. There did not seem to be anything about the place, not even a hammer. I looked around, saw a piece of board box on a shelf. I had the woman tear up a sheet and make some starch, as though she were going to starch clothes. I took the old board box, out of which I made a splint reaching from the knee to a little below the bottom of the foot, enveloping it on each side of the leg, leaving a space in the back and in front. I ran it into my starch until it was perfectly stiff. I then took my cotton batting, made a roller bandage, starching each layer as I went on. When the strach was dry I had a perfectly firm, very light, yet perfectly fitting splint. Three days thereafter the man was up on crutches. The swelling in the leg had materially diminished and the bandage became loose. I split it down in front and opened it, and just as often as it became loose I would tighten it. From that day I have never used any other splint. Plaster of Paris is good, and a great many use it—in fact, nearly everybody uses it now, but I would caution you to look out for one thing, and that is, not to get your bandage too tight. If it is too tight you will have an anemic limb, and that of itself will delay union.

Dr. McCrae: It seems to me a great deal of valuable time is being wasted in discussing the treatment of fractures, when further down on the program we have the subject of treatment of compound fractures. Dr. Lewis' paper does not treat of compound fractures, but ununited fractures. That is the idea which he wishes to convey. The members who have so far discussed the paper have been speaking on the treatment of compound fractures. We are not on that subject.

In the case Dr. Lewis mentioned, I hardly think it was one of non-union. It was not bony union, but he did have, as the first speaker said, the presence of a provisional callus. It is only cases where there is absolutely no provisional callus that we may call ununited fractures, and after six months, if union has not taken place, I doubt, with the first speaker, whether it ever will take place.

Dr. Howard: I would like to ask a question. I have a case of three years' standing in which the radius was thoroughly ossified for some time, but in trying to use friction eight months after the injury, I snapped off an inch and a half of the radius. There never has been provisional callus from the beginning, and I told the man there never would be union. I wish to know if it would not be good policy to remove as much of the bone as is diseased and try to treat it anew?

Dr. G. A. Nash—I think we are pretty well agreed as to the changes which take place in

this condition, yet so far I have not heard anything in regard to the application of the wire gauze splint. While the plaster of Paris cast is very efficient, and in some cases it would not be well to dispense with it, yet in the majority of cases a galvanized wire gauze splint will be found to be strong and very efficient in cases of fracture. It is applicable to most cases. It is light and airy, and it is a form of splint that should be used more frequently than it is. It is admirably suited for injuries of the ankle joint. An angular splint can be made out of this material. The galvanized wire can be soldered and the margins can be cut with scissors and hemmed over with pieces of plaster, which make it a comfortable, light and strong splint.

Dr. E. R. Lewis (closing): The first speaker, Dr. Jay of Chicago, compels me to say, from what I have found out with regard to ununited fractures, that many of us are yet clinging to December, while the earth is in her June. The pathology of this affection has been revolutionized since we studied medicine. We all know to-day that the periosteum is not the osteogenetic factor in the repair of bone. It has been proven conclusively that it is not. The experiments of Mr. Macewan of Glasgow established that beyond the possibility of doubt, and no longer do we talk of repair of bone through periosteal tissue. If you remove a bone for one inch or two inches and preserve the entire periosteum throughout, it collapses and forms a fibrous tube and does not develop a single osteoblast. That has been proven, and we must recognize it because it is a fact. What is it that produces and repairs bone? It is the soft tissue which resides within the bone itself. There is where the osteoblast is developed; there is where the bone receives its repair. The periosteum is not only a protection, but it is the nidus through which the circulation reaches the bone tissue proper. It is aboslutely necessary to the protection of the bone and allows vessels to reach the bone, but it does not enter in as an osteoblastic factor, and we must recognize that point before we can intelligently discuss delayed union, non-union, or whatever other term you may wish to apply to those cases which do not unite within a certain length of time. We must discard the old idea.

Dr. Crook's case of ununited femur, that he speaks of as having occurred in California, is interesting. I reported cases at the Chicago meeting where I had wired the humerus, the ulna and three months after the wires had been applied with soft parts uniting perfectly throughout, the bone was not repaired, due to specific influences which we have not discussed in this paper to-day, but which were dwelt upon at length in the paper I presented in Chicago.

Dr. Thorn has made a very happy suggestion relative to the starvation of these tissues and speaks of loose dressings and also calls attention to the fixation of joints. There is one point that we must understand more thoroughly and that is, to fix a leg from the sole of the foot to the hip. We can no longer hold to those ideas, which we believed were as sacred as the Holy Writ itself, because experience has taught us to the contrary. We are advancing, and we must not be clinging to wrong ideas.

I am sorry that Dr. Hoy did not hear my paper. He spoke entirely of the treatment of ununited fractures and illustrated it with six holes bored by a jeweler into the bone, and it served a good purpose. Why did the boring of these holes produce repair? I remember twenty-five years ago when the late Professor Pancoast of Philadelphia exhibited a woman from the far West, as he called it at that time—Wisconsin—who had an ununited fracture of the tibia. The bones were fixed together by means of screws. How did they act? He opened up the bone tissue through which the osteoblasts were formed, and from which the genuine bone structure began. The six holes drilled by the jeweler opened up the cancellous structure of the bone, where the soft tissues in the bone itself produced osteoblasts, without producing bony union. Had he not used a plate at all, the bone would have been more rapidly repaired and better.

Dr. P. Daugherty: Speaking of treatment, I do not care to enter into the subject after Dr. Lewis has practically closed the discussion, except to say that from my own personal experience I reported more than half a dozen cases at the Chicago meeting. I prefer the ivory pegs to the wire because they are absorbed. The ivory enters into the formation of bone by absorption.

A word in regard to Dr. Howard's case of

united radius, after three years. If we break loose the fibrous tissue at the ends of these bones and open up the cancellous structure, union will take place. You expose the bone-producing membrane by so doing. And if I know that I have a case of delayed union, I chloroform my patient and violently rub the ends together in order to knock off the fibrous tissue which has formed a false joint, as we term it.

COLOR BLINDNESS.*

By D. Emmett Welsh, M. D., Grand Rapids, Mich.

The object of this paper is not to enter into a theoretical consideration of color blindness, but to present for your consideration the importance of examinations for its detection in the train service of the railroads. Last year you listened to an able discussion of this subject by Dr. Wescott of Chicago, and also witnessed the practical tests as presented by Dr. Williams, now of Boston, formerly connected with the C. B. & Q. Incidentally I might mention that to Dr. B. Joy Jeffries of Boston, Mass., belongs the credit of first bringing before the railway managements of this country the importance of these examinations, not only from a theoretical standpoint, but its practical utility.

Various roads have adopted different forms of examination for the color sense, yet in the main they vary only slightly in the methods employed.

I will consider the subject of color blindness only in connection with normal eyes. In the adoption of these examinations by a railway a great difficulty confronting both the employer and employe is skepticism, and this is a feature that must be overcome. The employe imagines it is a good device to get rid of him when his record is good. The management, considering the welfare of the traveling public, does not appreciate its importance, and therefore considers that to distinguish between red and green is all that is necessary, until brought to witness an examination in which the defect is prominent. The only satisfactory manner, both to the employer and employe, in which these examinations can be made is by the ophthalmologist. He is unbiased in his views, and will render a report in accordance with what is found, whereas a foreman or assistant superintendent, having an enmity, can easily, by the examination he makes, cause the applicant to commit error and thus relieve him from the service without good cause.

Two conditions should always be borne in mind in making these examinations, viz.: Mental capability and real defect of color sense. Many men have a feeble color sense, and colors similar in character fail to impress the applicant as really different; in other words, hesitancy is displayed where positiveness should exist.

If a true defect is found, further examination is not necessary. Man, in the various walks of life, selects that which is pleasing and enjoyable to him, and profitable, but after a time so many things bearing upon the same subject present themselves that unconsciously he falls into a certain "rut" and becomes automatic. This is nowhere better illustrated than in the mechanic or engineer. In the latter, from years of trial as a fireman, the location of signal tower and station is known, and even on the darkest night something either marked or vague tells him "where he is at."

A few years of experience teaches the engineer where to apply the air to stop at station or water plug; the condition of the track tells him his location, and if the sense in this direction is quickened, then his perceptive sense must be quickened. A comparison as to intensity of light informs him its character, and though the judgment may be defective, he judges unconsciously, and is always on the alert for the slightest variation.

We, as surgeons, are all familiar with the fact that the engineer can very readily detect the slightest variation of sound while running, and can easily locate a defect in his machinery and readily perceive locations and light. Yet withal it is by comparison, and the slightest variation from the usual position of a signal might produce terrible destruction of life if the engineer was unable to detect differences in color.

I make examinations for visual defects and color blindness for the following roads: Grand Rapids & Indiana, Chicago & West

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

Michigan, Detroit, Lansing & Northern, Saginaw Valley & St. Louis.

My form of examination is as follows: The applicant presents himself with a card from the superintendent of the division to which he belongs requesting an examination.

I test the distant vision by Snellen's test, and new employes must have normal vision. If the examination of old employes shows one eye normal and the other one-half normal, a certificate is issued.

I then use Holmgren's method for the color test, and if the applicant is able to pass the same the examination is practically complete.

Thompson's method, varying slightly from this, I use as a second test, and on finding all correct I dismiss the applicant and sign a certificate, sending a report to the superintendent, who sends the same to our chief, Dr. G. K. Johnson, who indorses the report.

If an applicant fails in this and then cannot realize his defect, I examine him by the following device, arranged at my office: I have a caboose end built in a recess for that purpose. I have at the top and at each side and on the platform a lantern; these are the same as those in use on the rear ends of trains on the various roads. Colored glass is placed in them, behind which are electric lights of the same luminosity. The candidate is placed 30 feet away and asked to name the light as flashed. In every instance of color blindness errors in distinguishing the right colors are shown as with Holmgren's test.

This form of examination is done with a view to prove the correctness of Holmgren's test, and also to convince the skeptic that error does exist and its proof is palpable.

I have examined 1,380 men, including engineers, firemen, brakemen, conductors and switchmen, with the result indicated below:

Whole number examined	1,380
Number defective in vision or color sense	97
Number having defective vision	62
Number having defective color sense	35
Percentage having color defect	2.53
Percentage having visual defect	4.49

DISCUSSION OF DR. WELSH'S PAPER.

Dr. W. S. Hoy, Wellston, Ohio: A great many railroad surgeons are required to make examinations for color blindness among employes, and everyone who makes these examinations must be impressed with the dirty, filthy condition of the trainmen's flags. It is my duty to examine the men on the C., H. & D. system as far down as Ohio, and having examined a large number of sectionmen and trainmen, I found a number of persons in the employ of the company who were old and trusted employes, who had been on the road for years, and had never had an accident befall them. In two instances which I remember at this time, when Thomson's test was presented, the men had no means of knowing red from yellow, or blue from green. If I put out a red color they would be apt to call it blue or green, and they were just as apt to call it rose as any other color. After having failed on Thomson's test with skeins of yarn, I found that these men could go into the yard at night and designate promptly the lantern signals. While on the subject of color blindness, it has been said in the paper that some trainmen have difficulty in hearing. This is true. I have known men, standing the eye test, who could scarcely hear a watch tick at twelve inches, six inches, or even four inches, and who when the engine was blowing could hear an ordinary conversation. There seems to be some circumstance connected with the life of the engineer on a train which enables him to perceive by sound. What do we mean by color blindness? We mean inability of the individual to differentiate certain colors presented to him, and which are used on railroad trains for signals. We all know that if we were traveling on a train, we would feel more secure did we realize the fact that the trainmen, the sectionmen and stationmen, had an accurate idea and conception of the various colors presented, especially at night. Strange as it may seem, some of the old and trusted employes of the railroad companies of this country have run trains for many years without having met with any accident or without having been the cause of loss of life to the traveling public. I say these things are strange, and we have great hesitancy in reporting to the company a man who cannot stand the required test. As surgeon of the C., H. & D. system I think there is a great deal in connection with color blindness that we ought to overlook. A great many men cannot differentiate between colors. While they may pick out the fundamental color they cannot select the shades of the color.

I have interviewed a number of engineers on our road concerning the difference in seeing between the electric headlight and the old-time lightning bug headlight, and they tell me while behind the light, going away they can see a long distance before them, but at the approach of the train with the electric headlight, they are not able under any circumstances to regulate or calculate the distance of the engine with the electric light away from them. They cannot tell whether they are 600 or 800 yards distant. I have made a special inquiry about this matter and have found that the majority of engineers do not like the present system of electric headlights.

Dr. C. D. Wescott, Chicago: I quite approve of nearly everything that Dr. Welsh has said, particularly the statement that the examinations should be conducted by an ophthalmologist rather than by a foreman or superintendent. I also believe that examinations for vision and color blindness should be repeated at least as often as once in five years. We all know that vision fails and that certain forms of nervous disease may bring on changes in the color sense.

It is true that some railroad men may fail with the Holmgren or other office tests, but may succeed in differentiating perfectly on the tracks, or when examined by lanterns in the way that Dr. Welsh has suggested. I therefore believe that these tests should always be made as practical as possible; be made to embody as closely as can be the actual experience of men on the train and on the track; in other words, no matter how carefully and thoroughly the Holmgren or Thomson test may be carried out, the test with the colored lanterns should be added and the circumstances should imitate as closely as possible the conditions on the road.

It is very perplexing to know what to do about cases of partial color blindness. I am partially color blind myself and can appreciate very well the condition of trainmen who can under ordinary circumstances recognize without difficulty the different lights, but who are at a great loss in a foggy or smoky atmosphere. In driving along a country road, a person with perfect color sense will see red cherries on a tree long before an individual like myself. My own wife has poorer vision for form than I have, but her color perception is perfect. She can recognize cherries on a tree at twice the distance at which I can perceive them. In a clear atmosphere I can distinguish colored lights on the track very well, but in a smoky or foggy atmosphere I am in great doubt. These are the puzzling cases, but as only four per cent. of the men we examine are defective in color sense, we work no great hardship if we reject them all. The argument is often raised, that we should not reject a man with defective color sense who has done good service for the road which employs him for twenty or twenty-five years, and perhaps has never had an accident during all that time. It is considered a hardship to dismiss such a man. Nevertheless, we should not have men with defective color sense in the train service.

At our last meeting you will remember that Dr. Williams exhibited an apparatus for carrying out color tests with colored lights. It does not imitate as closely the conditions on the track as the method of Dr. Welsh, but it is capable of more modification, and a greater number of different colored glasses can be brought in front of the light than by any other method with which I am familiar. If we could adopt a standard all over the country for these examinations it would be very desirable. It is proper for this association to work in that direction.

Dr. Hoy: Why is it the percentage of color blind females is much less than males?

Dr. Wescott: Because it is a matter largely of education. As a rule, the females are more familiar with colors and work with them more than do men, and it is a matter of education, and perhaps of heredity.

Dr. Hoy: Do you believe the eye can be educated to overcome color blindness?

Dr. Wescott: Possibly, through certain channels. I believe many cases of partial color blindness can be overcome or improved by education. In some cases a defective color sense seems to be psychic rather than organic. Dr. H. M. Bannister of Chicago has written an interesting paper on "Color Blindness as a Psychic Affection." It would be interesting to every railway surgeon, I am sure.

Dr. W. B. Outten, St. Louis: I will grant that the oculists are absolutely correct from a scientific point of view with regard to color sense, and were I an oculist I should doubtless hold the same views. However, I main-

tain that in the running of a locomotive, that so far as the engineer is concerned, there is not an element with which he is surrounded and connected but what he is thoroughly educated and trained. Every nerve he possesses is well trained. There is not an engineer who runs an engine but what has his method of running it, and his plan is carried out year after year irrespective of his color sense. He is thoroughly familiar with the roadbed, the curves, the up and down grades of the track over which he runs. To illustrate what Dr. Hoy said, that in order to test the hearing a watch should be held eight feet from the ear. Look at the utter absurdity of this proposition. The tick of watches is entirely different. If it were possible to have a uniform tick made according to a given rule, we would have a standard to go by. Irrespective of that, amid the roar of steam and rattle of the train the engineer has an ear which is thoroughly educated as regards noises, and he is more competent to hear the click of a defective piece of machinery than any of you or I. The senses of the engineer are acute and active. He has to watch a number of things in front of his engine. He has got to hear and see. I can show you men who cannot tell red from green, yet they are capable, careful, cautious engineers. Take a train going at the rate of sixty miles an hour and the engineer may not be able to tell whether he sees a red light or not, but we consider the brains of the individual. It seems absolutely cruel to dismiss a man who is thoroughly competent in every way except in this one particular, that he has defective color sense. The other senses of engineers are educated to the highest point. Defective color sense alone should not condemn a man and result in his rejection as an engineer, after he has done good and efficient work for the road that employed him.

Dr. Welsh (closing): I am glad my paper has elicited some discussion. Dr. Hoy has spoken in regard to the matter of testing the hearing. I did not mention this in my paper, having left it out entirely. We find a great many engineers who have very acute hearing, while others are defective in this regard. Sounds and noises which are mild and pleasing to engineers would be painful to those possessing normal hearing.

With regard to color blindness, the applicant is not required to make mention of the color presented. No name is asked of him of the color shown. For instance, a lot of yarns are thrown on a white piece of muslin, in a good light; one test color is selected, and the applicant is asked to pick out colors lighter or darker, or any shade of that color. The question of naming the color does not enter into the examination at all. Difficulty will arise in the selection of the colors.

A point referred to by Dr. Outten is well illustrated in two cases in which examinations were made by myself, namely, that dependence is placed upon the engineer, or the fireman, and vice versa. To illustrate: One of the younger engineers in age, who has been running a locomotive for fifteen or sixteen years on the Chicago & West Michigan Railroad, and considered one of the best men on the road, and is given fast trains and specials to run, and carries the superintendents and general managers from point to point, one night in going into a station mistook the color and ran into an open switch. A red light was turned on him, and just as they were going around a curve the fireman was doing something on the inside of the cab and did not perceive the color. This was not known, and when an examination was made by the superintendent the color was given as white. The claim was made that in passing over the switch it jumped and threw them off the track. This engineer was sent up for examination along with other engineers and firemen, and when a regular examination was made it was found that he was color blind. He could not tell red, could not tell green, he was red-green blind. His fireman had defective vision, that is, vision was equivalent to about 1-10 normal vision. I made a report to the superintendent of the division and he was laid off with the request to go home and study all colors and come back for re-examination. This was done, and at the end of a month he failed in this examination. He returned in six weeks to two months again and failed again. I have examined him at various times since then until the present, covering now a period of some three years, and at each examination he makes the same error. It has since been learned by the officials and by a statement made by the fireman and engineer, that the fireman

depended on the engineer for vision, and the engineer upon the fireman for color.

Another case in point. An engineer and firemen were sent for examination, and it was found that the fireman was color blind, while the engineer had only two-sevenths vision. This I knew prior to the examination because I had examined him about six or eight years previous to the time he was sent up for examination. After the examination was completed and the report sent to the superintendent of the division, and the engineer receiving notice that he would not be employed, it was learned that he depended upon the fireman for color sense, and the fireman on him for vision.

In regard to engineers and firemen making mistakes at your office and not on the road. If you change the surroundings, put them on different roads, they cannot locate the switches. They will make the same error, or else approach the switches with undue caution so as to be able to stop in case of emergency, and it is a notable fact that this plan is tried among engineers who are old in the service. On approaching the station it was noticed how extremely careful they were in entering the station to see that everything was correct, and also in approaching switchlights.

Regarding the use of the electric light, referred to by Dr. Hoy, it is much easier at the office than other lights. On the Grand Rapids and Chicago & West Michigan Road lanterns are swung in front of the applicant to decide what color is presented to him. The intensity of the flame is always the same, and this makes quite a difference. If there is no defect in vision there is no mistake in selecting the color. If the applicant is visually defective it is simply guesswork.

An Unusual Termination to a Malpractice Suit.

Dr. W. O. Henry of Omaha has had a somewhat novel experience with the courts. He sued a patient for the amount of his bill and was in turn sued by the man for malpractice, damages being set at $8,000. Not only was the Doctor victorious in disproving malpractice, but he convinced the plaintiff and his attorney of the justice of his cause, and the former went out and borrowed $345 with which to pay what he owed for medical services, to save which he had instituted the malpractice suit.

CLINICAL REPORTS.

Kansas City Hospital, Missouri Pacific Railway Hospital Department.

OSTEOMYELITIS.

A. B. W., an agent for the Missouri Pacific Railway, aged 24, and maimed, entered the hospital December 9, 1895, with an osteomyelitis, which was the result of an injury received eleven years ago. The right tibia was very much enlarged anteriorly, and a sinus extended into the medullary canal to the depth of three inches. The anterior surface of the shaft of the tibia corresponded to the swollen portion some three inches in extent. The medullary canal was thoroughly curretted and all necrotic and inflammatory tissue removed. The operation was performed by Dr. Hamel. Good recovery.

COMPLICATIONS FOLLOWING AMPUTATION.

W. B. M., single, clerk, Missouri Pacific railway, aged 31, was run over while attempting to get on a moving train July 20, 1895. The left leg was crushed at the junction of lower and middle thirds. It was amputated five inches below the knee, cutting through apparently healthy tissue. The flaps and muscles sloughed after twenty-four hours, followed by cellulitis of the entire leg and thigh, complicated by a sapræmic condition. Secondary amputation was made August 20, 1895, and the bone sawed through the tubercle of the tibia. The stump healed kindly and union was complete in three weeks. Several weeks afterward a very large and painful neuroma was developed in the stump, and this, with the head of the fibula, which was left after the secondary amputation, were removed. The patient is well. These operations were performed by Dr. G. F. Hamel.

AN ISCHIATIC BURSITIS.

T. McH., engineer Missouri Pacific Railway, entered the hospital last March, presumably with an ischio-rectal abscess. It was opened, but did not do well. The trouble began with a swelling to the inner side of the right tuber-ischii. The original trouble was undoubtedly an ischiatic bursitis of several months' standing before he entered the hospital, which afterward suppurated. This was complicated by a severe diarrhœa, which lasted

several weeks. Examinations revealed sinuses extending in all directions, passing around the tuber ischii down between the flexor muscles of the thigh to within three inches of the knee joint, upward following the course of the sciatic nerve and then upward and inward along the outer side of the ilium as far as the sacro-iliac articulation. The patient was put under the influence of chloroform anæsthesia and all the sinuses were laid open, extending from the lower opening in the thigh to the inner side of the tuber-ischii and upward and outward for two inches, then upward and inward on the dorsum of the ilium to the sacro-iliac articulation. Further examination revealed necrosis of the tuberosity of the ischium, and a piece of necrosed bone as large as the first joint of the thumb was removed from the inner side of the tuberosity. In laying the sinus open a part of the gluteus maximus and biceps muscles were cut through, when another sinus was found extending up under the gluteus maxiums muscle to the outer side of the tuberosity of the ischium. The wound was thoroughly curretted and packed with gauze. The operation was performed by Dr. Geo. F. Hamel and the patient recovered completely.

FRACTURE OF THE NINTH AND TENTH DORSAL VERTEBRÆ.

F. S., married, aged 26, coal heaver for the Missouri Pacific Railway, was injured at Sedalia by falling from a coal chute. He was admitted to the Kansas City hospital July 24, 1896, with complete paralysis of sensation and motion from twelfth rib down. There was an absence of all reflexes except the cremasteric. An examination revealed fracture of the ninth and tenth dorsal vertebræ. In the absence of Dr. King, consulting surgeons Smiley, Fulton and Thompson were called in and confirmed the diagnosis. The patient was put under the influence of chloroform and an incision made over the spine, extending from the ninth to the twelfth dorsal vertebræ. The muscles were cut away. Further examination revealed comminuted fractures of the spine and laminæ of the ninth and tenth dorsal vertebræ, with dislocation forward of the ninth vertebra. The ninth and tenth ribs were fractured and the parietal pleura was ruptured. There was complete disorganization of the cord from pressure. On July 29 patient had a chill, followed by a temperature of 104 F. A physical examination disclosed pleurisy of the left side and pneumonia of right. Dr. Hamel performed the operation. The patient died August 2. Post-mortem examination confirmed the condition described above, with the addition that the body of the ninth vertebra was fractured.

CONCUSSION OF SPINE WITH COMPLICATIONS.

H. O. B., aged 36, single, painter for the Missouri Pacific Railway, fell from a ladder, sustaining a Colles' fracture of the left radius and concussion of the spinal cord, followed by paraplegia, and further complicated by multiple neuritis and cystitis from using the catheter. A vesical calculus formed. Perineal cystotomy was performed and a calculus as large as a filbert removed. A doubt still remains whether this stone was previously formed in the bladder or whether it could have formed within a month. Dr. Hamel operated. The patient recovered.

RECURRENT OMENTAL HERNIA.

John L., married, aged 34, locomotive engineer. Diagnosis: Recurrent right, oblique omental hernia. The patient was operated upon about one and a half years ago, when a McBurney's operation was made. The hernia recurred within a year after the operation. He was again operated upon December 28, 1895. It was intended that a Bassini's operation should be made, but after making an incision it was found impossible to do so on account of the abnormal condition of the parts and extensive adhesions of the sac and entire contents. About eight ounces of omentum was removed, as it was impossible to return it on account of adhesions. The operation was performed by Dr. Hamel and was followed by recovery.

AMPUTATION—OPEN FLAP METHOD.

A. B. A., switchman for the Missouri Pacific Railway, had his left leg crushed at the junction of the middle and lower thirds. The leg was amputated four inches below the knee on September 21, 1895, and the stump was treated by the open method, on account of the unhealthy appearance of flaps and muscular tissue; about one inch of both flaps and the muscular tissue on the fibular side of the stump, sloughed. After the necrosed tissue came away, the remaining portion of the fibula was removed and the flaps sewed together. Re-

covery followed with a good stump. Dr. Hamel operated.

FRACTURE OF THE SKULL THROUGH THE ORBIT—ENUCLEATION OF THE EYE.

Wm. M., section laborer for the Missouri Pacific Railway, was injured by falling on a pick, the sharp point passing through the orbit up into the brain. He entered the hospital July 4, 1895. On examination nothing could be seen but a slight wound of the left lower eye-lid and ocular conjunctiva; this was followed the next day by hemorrhage into upper lid with oozing of blood. The patient being unconscious, no history could be obtained and the diagnosis of fracture of the supra-orbital plate was made. The patient was placed under the influence of chloroform and on examination a probe was found to pass between ocular conjunctiva and the eye-ball up into the brain. It was decided to remove the eye-ball in order to get free drainage. The contents of the orbit was then removed by Dr. J. H. Thompson, after which Dr. King made a further examination and found that the inner half of the supra-orbital plate was fractured and pushed up into the brain for fully an inch. The bones were then removed, bringing away a portion of cerebral substance. A drainage tube was inserted in the brain and the orbit packed with gauze. The wound was redressed upon the third day, at which time another small piece of bone was removed. The discharge was persistent and quite free for some eight or ten days. The patient's mind gradually cleared up and he was discharged four months after the injury, seemingly well and in good mental condition.

A CASE OF SECONDARY HEMORRHAGE.

I. B., a brakeman for the Missouri Pacific Railway, aged 32, was admitted to the hospital February 22, 1895. His left leg was crushed up to the knee joint. An amputation of the thigh was performed at the junction of the lower and middle thirds. The patient did well until eight days later, when secondary hemorrhage occured: the flaps were opened up but no particular point could be discovered from which the hemorrhage came. The arteries ligated showed that they were intact. Blood seemingly oozed from bone and muscle. Each muscle was ligated separately with a circular ligature passed around the entire mass. The flaps were closed without drainage, and pressure made with a gauze compress. This stopped the hemorrhage, but suppuration followed and the parts healed by granulation. Dr. Rule amputated.

Traumatic Rupture of the Biceps Muscle of the Arm, With Open Fracture of the Internal Condyle of the Humerus.

At a recent meeting of the Philadelphia Academy of Surgery, Dr. John B. Roberts presented a man, twenty-eight years of age, who was admitted to the Methodist Hospital on December 11, 1895, with a longitudinal wound six inches long in the middle line of the front of the left arm just above the bend of the elbow. The limb had been injured by being caught between the bumpers of two railroad cars. The ragged end of a torn muscle, evidently the biceps, was seen through the wound, and the bicipital fascia was laid bare. Careful examination showed that the internal condyle of the humerus had been split off by an oblique line of fracture running into the joint. It was evident that the injury had torn nearly the whole thickness of the biceps muscle, and that the muscular fibers so torn had retracted into the upper part of the arm. The incision was extended upward for six inches to uncover the retracted fibers. The small portion of muscle untorn, which was about as thick as a little finger, was found to be the central portion of the biceps. The main mass of the muscle was drawn downward and sutured to its tendon with catgut. These sutures were applied very much as in the ordinary method of teno-suture. A counter opening was made on the back of the arm and a drainage-tube inserted because of the probable septic character of the wound, though sterilization was attempted. The wound was then sutured and the limb placed with the elbow flexed and the hand supinated so as to relax the biceps.

The next day it was necessary to remove some of the stitches because of the swelling due to sepsis. A plaster of Paris splint was applied to the back and internal surface of the arm in such a way as to keep the hand and arm in the position just described.

The patient has done well, the wound at the present time, January 17, being a superficial ulcer, and the patient having considerable action at the elbow-joint.—Annals of Surgery.

A Philadelphia paper once announced the arrival of the Siamese twins in that city in the following manner: One of the Siamese twins arrived here on Monday last, accompanied by his brother."

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"SINS OF OMISSION."

Under the title of "Some Surgical Sins of Omission," Dr. Charles B. Nancrede, professor of surgery in the University of Michigan, than whom there is no more careful and painstaking surgeon, has written a most excellent paper, which was read before a recent meeting of the Detroit Medical and Library Association, and published in the Physician and Surgeon for August, 1896.

His paper was inspired by the thought that interest in head injuries, especially so far as the general practitioner is concerned, seems to have died out, and he quotes Nussbaum, who says truly that the fate of a wounded man is in the hands of the surgeon who first examines him. It is the family doctor who is naturally first consulted about injuries to the head and other parts of the body, as well as about diseases of the eye, womb or liver, and what a wise and good man he should be! He should be wise enough to recognize all known ailments, and true enough to himself, his profession and his patient to decline the care of cases which he is not prepared by training and experience to manage with skill; for no one man can be skilled in internal medicine, surgery, obstetria, gynecology, ophthalmology, and the other specialties of modern medicine. The general practitioner, however, is almost daily called upon for advice in regard to some case requiring the care of one skilled in some special field, and if it be a case of injury he must at least be able to apply a temporary dressing in accordance with the dictates of modern surgical art, even if the injured part be an eye. That due care is not always observed in the ordinary handling of scalp wounds and more serious injuries of the head, even by those professing to be surgeons, is the reason for the excellent paper from which we shall quote. Dr. Nancrede says:

"The first evil practice to which I desire to call your attention is the natural sequence of the fundamental error that a scalp wound is a trivial affair, demanding neither special care nor skill in its treatment, because the scalp is such a vascular structure that open traumatisms will nearly always heal by the first intention, or by a rapid granulating process. This, like all half truths, sometimes proves more disastrous than the most serious error. Dangerous consequences from ordinary scalp injuries are doubtless the exception, but they are needless exceptions in nearly every instance, and when human life is at stake are not to be tolerated. If all believe firmly as I do, that every scalp wound, however trivial, is one menacing life, the exceptional—that is, dangerous—cases, will be few and far between. Whence comes the danger? From infection. But why should infection be so dangerous in structures from which their vascularity should be best able to cope with germs? Because of the vascular relations existing between the most superficial vessels and the intracranial circulation. Did time permit, I could demonstrate the very numerous routes of direct and indirect vascular communication between the scalp and the vessels of the brain. Suffice it to say that the vessels of the scalp, surrounded with their perivascular lymph sheaths, communicate with those of the aponeurosis of the occipito-frontalis muscle, the latter's with osseous vessels, and the diploic in turn with the great venous sinuses of the cranium. Hence, in those cases which are in reality at the outset nothing more than simple scalp wounds, a cellulitis, septic puelo-phlebitis, osteo-myelitis, infective meningitis, or even pyemia may, and too often does, result from unfortunate environment or unskillful treatment of a scalp wound. I have seen death from pyemia follow a mere abrasion produced by a blow with the bare fist on the forehead, and tetanus from an insignificant head wound. But what war-

rant exists that the smallest scalp wound is nothing more? Let me give a few illustrations of simple scalp wounds, as they were termed by those who first treated them."

He then recites the case of a youth who came complaining of a sore on the left side of his head, which had existed for over two months, the result of a blow which had not caused unconsciousness or other brain symptoms, and which had been treated as a "simple scalp wound." A penknife blade was found in the "sore" which had penetrated the brain substance for over an inch and had caused an abscess from which the boy subsequently died. He describes another case as follows:

"Again, a boy having been knocked down by a snowball thrown by a man, received a small wound in the frontal region. He came under the charge of one of the out-surgeons to the same hospital. Until serious intracranial mischief became manifest no suspicion of the real nature of the injury was entertained. One of my colleagues explored the wound, as should have been done at first, discovering a small pebble imbedded in the bone, a compound fracture, infection, etc. The case terminated fatally in a few days by diffuse intracranial suppuration and brain abscess."

These cases abundantly illustrate the fact that no wound or injury about the head is so trivial as to be treated without care and thoroughness, and, as Dr. Nancrede says:

"The best way to illustrate the 'sins of omission' committed in such cases as we have been considering will be to contrast the proper course with that too commonly pursued.

"After thorough sterilization of the hands and instruments a compress wet with some efficient germicidal solution should be placed over, or lightly packed into, the wound. Next the scalp should be shaved and disinfected for at least one inch around the wound, preferably much farther. Agents calculated to remove all oily materials should be employed to enable the germicidal solutions to act. Renewed disinfection of the hands must precede the disinfection of the wound itself, which should now, for the first time, be explored. Should the slightest doubt exist as to the presence of a fracture, the wound must be sufficiently enlarged to determine this and secure disinfection. Passing by, for the present, omissions of important measures in the treatment of fractures, let me contrast the two methods commonly employed during an examination of a scalp wound. The attendant takes off gloves, which have been used for months perhaps, while attending all sorts of contagious diseases, as erysipelas. Oftentimes, without washing the hands, or after a perfunctory attempt, without cleaning the nails, removal of the hair around the wound or sterilization, the wound is explored and infected, if it has not already become so, when, finding a fracture exists, the physician if surgically inclined proceeds to attempt such disinfection as will give him least trouble, or salve his conscience, after which he operates. If not willing to operate, after infecting the wound and thus doing all the damage he can, he sends for a surgeon or has the patient conveyed to a hospital. I have said "the practitioner uses such measures of disinfection as will give him the least trouble or will salve his conscience," because a man proceeding as I have described, either does not believe in asepsis at all, or is not honest enough to do what he knows is his imperative duty."

It takes a little more time to be thorough in our work, it requires more care and thoughtfulness always to be clean, but a little more time may save a life and a little more care may save a limb, and we have no right to do less than our best for every case for which we become responsible. The man who is habitually clean about everything can most easily and surely sterilize his hands for an operation; he who is thoughtless about putting his fingers into pus and unclean places, without immediately sterilizing his hands, will see many suppurating wounds and some cases of septicæmia in spite of corrosive sublimate and carbolic acid.

He believes in actively interfering in all cases of compound fracture of the skull, and says:

"As an operation, properly conducted, should lessen the immediate risks to life rather than increase them, and as it is the sole prophylactic means at our disposal to lessen the chances of grave sequelæ, I contend that it is out duty to intervene. False notions relative to the pathology of compound fractures, together with certain statements which are still allowed to remain unchallenged in our standard surgical works, explain the antiquated practice too often still in vogue. Some of my own writings are obnoxious to the charge of incorrect pathology likely to give rise to errors in practice, but my practice was better than my pathology, and I have since endeavored in my various public utterances to correct any misapprehensions left. * * * The modern and sole reason in many cases of compound fracture which induces the surgeon to operate is not intracranial hemorrhage, compres-

sion by depressed bone or irritation produced by sharp osseous spiculæ, for often none of these exist, as for instance in such fissured, undepressed fractures with imprisoned hairs, as I have already mentioned, but to secure disinfection and drainage, if disinfection cannot successfully be effected. Immediate danger to life from a broken skull does not reside in the mere injury to the osseous tissue, the depressed spiculæ of the same, or the lacerated brain substance, unless the latter involves centers essential to life, but from infection. Doubtless infection is more likely to prove effective if the vitality of the encephalic contents is lowered by the damage inflicted by the continued pressure of bone spiculæ or a foreign body, but unless infection has occurred recovery will ensue. The opportunity for disinfection by the removal of infected bone fragments, hairs, and foreign bodies, with drainage in case the efforts at disinfection fail, are the real indications for trephining in compound fractures, and not to do so is a serious "sin of omission" which such teachings as I have been combatting tends to perpetuate.

"The late headaches from dural irritation, epilepsies, insanity and other sequelæ of compound fractures are additional and valid reasons for immediate prophylactic trephining in all such cases. If neither depressed bone, spiculæ or infected foreign bodies be removed, no harm should result from a properly conducted operation, but in the vast majority of instances some or all of these conditions exist and will be only remediable by operation."

The Sterilization of Catgut.

At a recent meeting of the Berlin Medical Society Saul (Wiener Klinische Rundschau, 1896, No. 9, p. 154) described a method of sterilizing catgut by means of boiling alcohol, that he has found efficacious and satisfactory. A combination of alcohol 80 parts carbolic acid 5 parts, and water 15 parts effected the purpose best. Hofmeister (Centralblatt für Chirurgie, 1896, No. 9, p. 193) has employed the method of Saul, but failed to secure satisfactory results. His own method consists in first hardening the crude catgut, wound upon rolls, by immersion for twenty-four hours in a 4 per cent. solution of formalin; then boiling in water for ten minutes, and subsequent hardening and preservation in alcohol, to which have been added 5 per cent. of glycerin and one-tenth per cent. of mercuric chlorid.—Medical News.

Physicians, when they have found out the cause of a disease, consider they have found out the cure.—Cicero.

Notes of Societies.

Association of Erie Railway Surgeons.

The annual meeting of the Association of Erie Railway Surgeons will be held at the Kent House, Lakewood, N. Y., on September 21, 1896. Matters of great importance are to come before the association, one of which is the relief and hospital system for disabled railroad men, which will be presented to the association by Chief Surgeon C. M. Daniels.

Mr. E. B. Thomas, president of the Erie Railroad System, has accepted an invitation and will be present at this meeting. Surgeon F. J. Lutz, president of the National Association of Railway Surgeons, and W. B. Outten, chief surgeon M. & P. R. R., St. Louis, have both promised to be present. Dr. J. B. Murphy of Chicago has promised also to attend.

There will be a larger attendance, and for several reasons a more interesting session than at any previous one.

John L. Eddy, M. D., Olean, N. Y., President.
W. W. Appley, M. D., Cochecton, N. Y., Secretary.

Medical Society of the Missouri Valley.

The ninth annual session of the Medical Society of the Missouri Valley will be held at Council Bluffs, Ia., September 17, 1896. Headquarters, the Grand Hotel, Pearl Street and First avenue; place of meeting, "League Room," Grand Hotel. The following is the scientific programme:

1. "Something About Instrumental Labor," Dr. F. Damour, Bolckow, Mo.
2. "A Case of Anterior Dislocation of the Head of the Radius," Dr. G. W. Boot, Hartley, Ia.
3. "Operative Technique in Appendicitis," Dr. C. C. Allison, Omaha, Neb.
4. "Skin Grafting, a New Method," Dr. J. W. Kime, Des Moines.
5. "A Case of Chronic Pharyngitis Simulating a Tumor," Dr. F. W. Dean, Council Bluffs.
6. A Case—Title Not Given, Dr. J. M. Barstow, Council Bluffs.
7. "Treatment of Burns of Conjunctiva," Dr. D. C. Bryant, Omaha.
8. "Breech Presentations," Dr. A. D. Wilkinson, Lincoln, Neb.
9. Two Cases—(1) "Gastrorrhaphy for Dilatation of the Stomach and Ptosis of the Transverse Colon; and (2) "A Successful Gastro-enterotomy with the Murphy Button," Dr. J. E. Summers, Jr., Omaha.
10. "Treatment of Hydro-Thorax and Empyema." Dr. J. M. Emmert, Atlantic, Ia.
11. "Congenital Dislocation of the Hip," Dr. B. B. Davis, Omaha.

12. A paper—title not given, Dr. R. Hanna, Red Oak, Ia.

13. "Retrogade Catheterization," Dr. A. F. Jonas, Omaha.

14. "Mental Dynamics and Psycho-Therapeutics," Dr. W. B. Lawrence, Red Oak, Ia.

15. "An Instructive Case of Labial Cyst," Dr. R. M. Stone, Omaha.

16. "Typhoid Fever," Dr. M. C. Christensen, Council Bluffs.

17. "Remarks on Appendicitis," Dr. F. W. Porterfield, Atlantic, Iowa.

18. "Meningocele"—with Report of Case, Dr. J. P. Lord, Omaha.

19. "Pulmonary Tuberculosis; Etiology," Dr. C. Engel, Aspinwall, Ia.

20. "A Case of Gunshot Wound of Rectum," Dr. V. L. Treynor, Council Bluffs.

The B. & O. Railway Surgeons' Association.

The semi-annual meeting of the Baltimore and Ohio Association of Railway Surgeons was held in Philadelphia, June 23, 24 and 25, at the Hotel "Hanover." The committee of arrangements had very wisely prepared the various parts of the programme, so that ample time was given to the reading of all the papers and their free discussion. The intervening time was taken up with interesting and instructive clinics at several of the city hospitals.

The meeting was called to order at 8:30 p. m., June 23, by President J. M. Spear of Cumberland, Md. Papers were read that evening and the following day by Charles A. Oliver, M. D., Philadelphia, "A Clinical Study of the Ophthalmic Symptoms in a Case of Fracture of the Anterior Portion of the Base of the Skull." W. E. Slathers of Wheeling, W. Va., "Fractures." B. J. Byrne, M. D., Ellicott City, Md., "Treatment of Fracture of the Olecranon," read by the secretary. C. M. Frissell, Wheeling, "A Case of Mal-Practice brought Before the West Virginia Courts. In this case the defense is utterly deprived of all chance to defend, on account of the rejection of all professional testimony. Dr. Charles A. Oliver read a paper on "Some of the Inefficiencies of the Methods Commonly Employed by Railway Surgeons for the Detection of Subnormal Color-Perception." J. M. Thorne, M. D., of McKeesport, Pa., read a paper on "The Proper Amputation, with Reference to the Adjustment of Artificial Limbs." Dr. J. J. Hamilton of La Paz, Ind., read a short article on "Tablets and Tablet-Making." Dr. W. L. Dick, Columbus, O., read a paper on "Shock or Neuro-Paralysis.

The discussions on the several papers were conducted in a very spirited manner throughout, which lent much to the interest of the several sessions of the association. An amendment to the constitution was introduced, to be acted on at the next meeting, changing the meetings of the association from semi-annual to annual meetings.

The committee on necrology reported the death of three members of the association during the past year: Drs. T. F. Barton, D. P. Aldrich and T. C. Martin.

The following were elected to membership: L. G. Thacker, M. D., Defiance, O.; W. S. Powell, M. D., Defiance, O.; M. Campbell, Parkersburg, W. Va., J. W. McDonald, M. D., Benwood, W. Va.; Charles A. Oliver, M. D., Philadelphia, Pa.; J. A. Ellegood, Wilmington, Del.; W. A. Shuey, Piedmont, W. Va.; G. B. Masters, Rockwood, Pa.; W. M. Dealty, Newark, O.; H. G. M. Kollock, Newark, Del. All the various sessions of the association were well attended and the interest in the work was attentive and at times quite enthusiastic, so that all who took this pilgrimage to the City of Brotherly Love could feel themselves fully repaid. Not the least interesting part of the programme was the flying visit made by many of the members with their wives to Atlantic City. The next meeting will be held in December at Chicago.

J. A. M. Kean, Secy.

The papers read at the above meeting will be published in future issues of The Railway Surgeon.

Mississippi Valley Medical Association.

President, H. O. Walker, M. D., Detroit, Mich.; 1st vice-president, B. Merrill Ricketts, M. D., Cincinnati, O.; 2nd vice-president, W. F. Barclay, M. D., Pittsburg, Pa.; secretary, H. W. Loeb, M. D., St. Louis, Mo.; treasurer, H. N. Moyer, M. D., Chicago.

Executive Committee: W. T. Belfield, Chicago, Ill.; C. S. Cole, New York, N. Y.; Geo. J. Cook, Indianapolis, Ind.; I. N. Love, St. Louis, Mo.; J. M. Mathews, Louisville, Ky.; A. M. Owen, Evansville, Ind.; C. A. L. Reed, Cincinnati, O.; X. C. Scott, Cleveland, O.; R. Stansbury Sutton, Pittsburg, Pa.; W. N. Wishard, Indianapolis, Ind.

Judicial Council: W. N. Wishard, Indianapolis, Ind.; T. E. Holland, Hot Springs, Ark.; A. P. Buchanan, Ft. Wayne, Ind.

Chairman Committee of Arrangements, C. A. Wheaton, St. Paul, Minn.

Headquarters, Windsor Hotel, St. Paul, Minn.

At St. Paul, September 15, 16, 17, 18, 1896:

PRELIMINARY PROGRAMME.

President's Address, H. O. Walker, Detroit, Mich.

Harold N. Moyer, Chicago, Ill., "Address on Medicine."

Horace H. Grant, Louisville, Ky., "Address on Surgery."

I. A. Abt, Chicago, Ill., "The Clinical Significance of the Child's Fontanelle."

W. W. Allison, Peoria, Ill., "Proprietory Prescriptions."

Truman W. Brophy, Chicago, Ill., "A New Operation for Cleft Palate."

Carl Barck, St. Louis, Mo., "Some Rarer Forms of Keratitis."

A. C. Bernays, St. Louis, Mo., "The Results of Operations per se in Cases of Tubercle and Cancer."

S. S. Bishop, Chicago, Ill., "Mastoid Diseases; Their Medical and Surgical Treatment."

J. H. Buckner, Cincinnati, O., "Rupture of the Choroid Coat."

Eduard Boeckmann, St. Paul, Minn., "Operative Treatment of Pterygium."

Gustavus Blech, Detroit, Mich., "Treatment of Some Inflammatory Diseases of the Gastro-Intestinal Tract."

Gustavus Blech, Detroit, Mich., "Kola."

R. H. Babcock, Chicago, Ill., "A Report of a Case Illustrating the Value of Secondary Physical Signs in the Diagnosis of Cardiac Diseases."

B. M. Behrens, Minneapolis, Minn., "Rhinoscopic Examinations in General Practice."

Guido Bell, Indianapolis, Ind., "Irregularities in Delivery Due to Short Umbilical Cord."

A. H. Cordier, Kansas City, Mo., "Gastro-Jejunostomy in Gastrectasis."

Ephraim Cutter, New York, "Conventional Treatment of Heart Disease versus Positive Treatment."

J. Homer Coulter, Chicago, Ill., "Tonsillotomy by Means of the Cautery Blade." Discussion opened by H. W. Loeb, St. Louis, Mo.

G. I. Cullen, Cincinnati, O., "The Newer Remedies in Otology and their Results."

M. F. Cupp, Edinburg, Ind., "Infant Feeding; the Anti-dyscrasic Action of Cow's Milk."

W. S. Caldwell, Freeport, Ill., "Ether and Chloroform, their Comparative Merits as Agents for the Production of General Anæsthesia."

J. H. Dunn, Minneapolis, Minn., "Appendicitis; to Operate or Not to Operate."

C. Travis Drennan, Hot Springs, Ark., "Syphilis as an Aetiololical Factor in the Production of Tabes Dorsalis."

J. O. DeCourcey, St. Libory, Ill., "Preventive Medicine."

Arthur R. Edwards, Chicago, Ill., "Certain Misconceptions Regarding Cardiac Murmurs and Their Significance."

J. Frank, Chicago, Ill., "A New Method of Fastening the Broad Ligament in Alexander's Operation."

Alex Hugh Ferguson, Chicago, Ill., "Choledochotomy in America with the Report of Four Cases."

G. Futterer, Chicago, Ill., "Pleuritic Effusions and Their Treatment."

A. Goldspohn, Chicago, Ill., "Rational Operations for the Cure of Retroversions and Flexions."

Augustin H. Goelet, New York, Paper.

E. M. Houghton, Detroit, Mich., "A Demonstration of the Therapeutic Action of Antitoxins."

Henry Hatch, Quincy, Ill., Paper.

R. C. Heflebower, Cincinnati, O., Paper.

Florence W. Hayes, Terre Haute, Ind., "Stirpiculture."

James B. Herrick, Chicago, Ill., "On the Importance of Physical Signs Other than Murmur in the Diagnosis of Valvular Diseases of the Heart."

C. H. Hughes, St. Louis, Mo., "Honorary Fellow of the Chicago Academy of Medicine —The Neural Factor in Clinical Medicine."

Talbot Jones, St. Paul, Minn., "The Value of Medicinal Antipyretics in View of Newly Acquired Knowledge Respecting the Nature of Acute Infectious Diseases."

J. T. Jelks, Hot Springs, Ark., "Treatment of Syphilis."

Elmer Lee, Chicago, Ill., "The Physiologic Treatment of Typhoid Fever."

Bransford Lewis, St. Louis, Mo., Paper.

F. F. Lawrence, Columbus, O., "The Pathology and Treatment of Suppurative Salpyngitis."

I. N. Love, St. Louis, Mo., Paper.

A. H. Meisenbach, St. Louis, Mo., Paper.

L. Harrison Mettler, Chicago, Ill., "The Lumbar Enlargement of the Spinal Cord."

J. B. Murphy, Chicago, Ill., "Indications for and Demonstrations of Removal of the Gasserian Ganglion."

Wm. J. Mayo, Rochester, Minn., "The Surgical Treatment of Pyloric Obstruction."

Thos. H. Manley, New York, "Conditions which may Simulate Organic Obstruction of the Rectum."

H. P. Newman, Chicago, Ill., "Multiple Operations in Pelvic Disease."

"A. J. Ochsner, Chicago, Ill., "Nerve Sutures and Other Operations for Injuries to the Nerves of the Upper Extremities."

N. H. Pierce, Chicago, Ill., "Submucous Linear Cauterization; A New Method for Reduction of Hypertrophies of the Conchae."

Paul Paquin, St. Louis, Mo., "The Treatment of Experimental Tuberculosis in Animals by the Use of Blood Serum."

Frederick Peterson, New York, "The Pathology of Idiocy."

Curran Pope, Louisville, Ky., "Chorea."

Hugh T. Patrick, Chicago, Ill., "Electro-Diagnosis and Electro-Therapeutics Simplified."

"Hugh T. Patrick, Chicago, Ill., "Trunk Anæsthesia in Locomotor Ataxia."

C. B. Parker, Cleveland ,O., "The Use of Oxygen in Chloroform Narcosis."

H. O. Pantzer, Indianapolis, Ind., Paper.

D. C. Mamsey, Mt. Vernon, Ind., "My Favorable Experience with Diphtheria Antitoxin."

Byron Robinson, Chicago, Ill., "The Physiology of the Peritoneum from Experiments."

Leon Straus, St. Louis, Mo., "Some Fads and Fallacies of Modern Rectal Surgery."

R. Stansbury Sutton, Pittsburg, Pa., "Pregnancy Complicating Operations on the Uterus and its Appendages. Remarks with Cases."

A. E. Sterne, Indianapolis, Ind., "The Significance and Occurrence of Capillary Pulsation in Nervous Diseases."

E. W. Sanders, St. Louis, Mo., "Twenty-seven Cases of Croup."

E. B. Smith, Detroit, Mich., "The Necessity of Vivisection."

J. H. Taulbee, Mt. Sterling, Ky., "Gunshot Wound of the Liver; Report of Case Involving Diaphragm and Lung; Operation Successful but Fatal Termination Two Weeks later from Pneumothorax."

Fenton B. Turk, Chicago, Ill., "Further Report on the Treatment of 500 cases of Gastritis." (Demonstrations.)

Ferd C. Valentine, New York, "The Rapid Cure of Gonorrhœa."

Weller Van Hook, Chicago, Ill., "Some Unusual Cases of Appendicitis."

K. K. Wheelock, Ft. Wayne, Ind., "Mastoidectomy in Caries of the Temporal Bone."

W. E. Wirt, Cleveland, O., "A Further Contribution on the Use of Dry Heat in the Treatment of Chronic Joint Affections.

Casey A. Wood, Chicago, Ill., "A Further Contribution to the Ocular Treatment of Epilepsy."

D. S. Maddox, Marion, O., "The Decadence of the General Practitioner and the Reign of the Specialist."

RAILROAD ARRANGEMENTS.

The various passenger associations have granted a round trip rate of one and one-third fare on the certificate plan. Those who desire to attend should obtain receipts for the amount paid for tickets (of members and their families) to St. Paul. These receipts must be presented to the secretary, Dr. H. W. Loeb, upon arrival in St. Paul. The return trip must be made within three days after the close of the meeting; however, the time will be extended for those who take the Yellowstone excursion. By special arrangement, the Burlington route will place at the disposal of those who desire to go from St. Louis, or through St. Louis, a well appointed sleeper, leaving St. Louis at 11:50 a. m., Sunday, September 12, and Monday, September 13, and arriving in St. Paul Monday and Tuesday morning. Reservations may be made at any time.

Notes, News and Personals.

D. C. B. Fry has been appointed chief surgeon of the Peoria, Decatur and Evansville, with headquarters at Mattoon, Ill., vice Dr. G. M. Young, resigned.

Post Graduate Medical School of Chicago Moves.

The Post Graduate Medical School of Chicago moved into its new building and new location, at 2400 Dearborn street, September 1, 1896. The new building is an ornate structure seven stories in height, constructed as a clinical school and a clinical hospital. The school is complete, having the most modern lecture rooms and laboratories. The hospital has accommodations for 100 beds. One floor is artistically furnished for private patients. There are four operating rooms of the most modern construction, including an amphitheater operating room which will accommodate 300 students. The building is lighted with electricity and is provided with elevators. The new location is at 2400 Dearborn street (Dearborn and Twenty-fourth street). This is selected because of its superior clinical advantages. Within a distance of 10 minutes' ride from the school proper are the St. Luke's, Charity, Michael Reese, Mercy, Woman's and Wesley hospitals. Clinical instruction will begin in the new quarters at once.

Abdominal Section by Cow's Horn.

Skilling (Amer. Jour. Obstet., July, 1895) records a case in which this accidental operation was performed without a fatal result in a non-pregnant woman. The injury is of interest in relation to well-known instances of succesful cesarean section carried out in the same manner. Skilling was called in shortly after the accident. The patient lay in bed, her clothing saturated with blood. Her countenance was anxious and pale, but there was only slight evidence of impending shock. The cow's horn had entered the abdomen just above the symphysis, a little to the right of the median line, and ran obliquely to the right, making a rent six inches long. The peritoneum was involved; the intestines protruded; loss of blood was relatively trifling. The intestines were replaced, the peritoneum closed by a continuous suture of fine silk, and the remaining layers of the parietes by interrupted silk sutures. The wound healed almost throughout by first intention except at the lower angle, where slight suppuration took place, probably from unavoidable contamination with dirt during or after the accident. Recovery was rapid and complete.—British Medical Journal.

Extracts and Abstracts.

The Modern Treatment of Burns.

By Henry J. Kelly, M. D.,
Lecturer on Surgery, New York Polyclinic.

When we find suppuration, putrefactive decomposition of discharges, and sloughs, with the attendant septic fever, commonly accepted as necessary accompaniments of the healing process in wounds caused by burns, and that indifferent rags soaked in carron oil is a favorite dressing for such cases, it would seem that the methods successfully employed to prevent infection in other wounds are looked upon as of no avail when applied to burns.

This acceptance of infection as a necessity in these cases is all the more singular when we consider that a burn, because produced by a high degree of heat, is always primarily an aseptic wound. Could we maintain this condition of asepticity not only would we spare our patient the dangers of a septic process, but we would prevent his becoming the source of disgusting odors very evident to the surgeon during the change of dressings.

In the case of surface wounds caused by burns, i. e., wounds having no pockets or cavities to drain and being essentially aseptic in origin, are we not justified in the belief that a plan of treatment which would prevent infection in other classes of surface wounds would be equally successful? My own experience leads me to believe that in so far as we are able in any given case to practically apply the principles upon which success depends, in so far will we be able to maintain an aseptic condition during healing. There will be no putrefaction of sloughs or discharges, no fever, and in thoroughly successful cases the discharges will not be purulent; of course, where the vitality of tissues is destroyed, sloughing cannot be prevented, but a slough free from infection is not only inodorous but is a quite harmless foreign substance and not a septic focus.

The dry dressing of wounds, which has been recommended for burns, is a method which has been more or less in use for some time and which aims to prevent infection or the development of germ activity by desiccation of the surface and discharges, the bacteria being thus deprived of the moist field necessary for their propagation.

This dryness of the wound may be secured by the use of dusting powders, plain or antiseptic, or by the use of gauze or other materials in dressings which allow of evaporation.

The usefulness of this form of dressing, in wounds from burns, must be very limited, various reasons existing for its failure practically. In extensive burns the necessary dry condition of the wound cannot be maintained and infection occurs; again, certain antiseptic powders cannot be used on large surfaces owing to their liability to cause toxic effects. And where protection of the surface against contact has necessitated the use of gauze dressings, the pain on removal of the tightly adherent material from the raw surface is enough to compel one to abandon their use. The fatal objection, however, is the failure of this method to maintain asepsis.

The method of dressing which in my hands has given the best results is one for which no originality is claimed, it being simply the moist dressing so generally used in surgery, somewhat modified to fit it to the practical necessities of the case in burns. The materials are all easy of procurement, are easily sterilized or impregnated with antiseptics if required, and are easy of application.

The dressing is most efficient in controlling or at least mitigating sepsis, is comfortable to the patient when applied, and its removal is absolutely painless.

These advantages are sufficiently decided to warrant a rather minute attention to details since in that rigid attention will be found to lie the success of the method.

It would not seem from my own experience that the use of antiseptics was of as much service as thorough asepsis, for in cases where the extent of the burned surface was such as to preclude the use of strong solutions, the results have been satisfactory.

In a burn of moderate severity, when the kidneys are sound and the patient not an alcoholic, what shock is present will most probably be slight, and will be well controlled by the injection of a full dose of morphia; this will also help to obtund the sensibilities during the dressing, the first step of which must be a thorough preparatory cleansing of the wound and its vicinity. If the wound be recent and we have no especial reason to believe infection has already occurred, corrosive sublimate solutions may be altogether omitted and sterile water or Thiersch's solution used in large quantity, or weak solutions of bichloride (not stronger than 1-3,000) may constitute the first washing, the wound being afterward douched with sterile water or borosalicylic solution. The use of sterile water at a temperature of 110 degrees F., to which sufficient sodium chloride has been added to make the normal salt solution (a heaping teaspoonful to a quart of water), will be found less irritating to the patient that plain water; this must be used in large amounts, thorough and repeated flushings of the surface being advisable, and is a most efficient means of cleansing the wound.

In burns already infected, and where suppuration has been established, it is safer to use a

preliminary washing of sublimate solution, possibly as strong as 1-1,000. If the burn be extensive, this must be followed by copious douching with sterile water or non-poisonous antiseptic solutions.

During the cleansing of the wound, and indeed during the whole treatment, the greatest care should be exercised to prevent the rupture of unbroken blisters. So long as the epidermal covering of the vesicle remains intact, infection of the surface beneath cannot occur, and that portion of the burn at least may be regarded as a subcutaneous lesion, protected by that very fact from infection, and will go on to heal as such. When on examination we find a blister so large and tense as to interfere with bandaging, or which threatens rupture, we might aspirate a portion of the contents by the subcutaneous method. A sterile needle is introduced through a small fold of skin, pinched up at a little distance from the blister, pushed on into its cavity and sufficient serum allowed to run out to reduce tension; the needle is then quickly withdrawn, and the skin fold allowed to slip back into place, when the opening into the skin and that into the blister will no longer be continuous.

When we proceed to the dressing proper of the wound, we must adjust our treatment to the different degrees of severity which will probably be found; portions simply hyperæmic may be anointed with a five per cent. solution of phenol in sterile olive oil, which will greatly reduce the heat and subsequent itching; all denuded surfaces are to be covered with strips of gutta-percha tissue. This material must be kept in cold carbolic acid watery solution, two per cent., and as it is ruined by placing it in warm water, if before applying it to the wound it is desired to wash off the carbolic acid, cold sterile water should be used. Gutta-percha may also be fitted over unbroken blisters, which it will protect from rupture. Over areas in which slough is impending a moist gauze compress covered with rubber tissue to prevent evaporation forms an antiseptic poultice retaining heat, favoring suppuration and preventing putrefaction. Over all, a large, thick layer of sterile absorbent cotton through which no penetration of germs can occur is applied and the dressing finished with a well-fitting bandage.

It is needless to add that the same faithful and scrupulous attention to cleanliness of hands, instruments, etc., is as necessary as in an aseptic operation, and that these same precautions must be kept up until the termination of the case.

The dressings should be changed frequently, during at least the first week say once daily—later, once every two or even three days will be sufficient.

It may be noticed that no mention has been made of iodoform, and very little stress laid upon the use of any particular antiseptic, except a caution as to the use of strong solutions of poisonous antiseptic drugs. Personally I do not undervalue the use of iodoform, and when the burned surface has not been extensive have always used it; indeed, under a moist dressing, iodoform finds the field necessary for its best action. It must, however, be borne in mind that in all cases of extensive burns the emunctories, especially the kidneys, will be overtaxed, and I have felt safer in redoubling my efforts at asepsis rather than in risking the use of toxic antiseptics.—Polyclinic.

The Fluoroscope.

The laboratory of Thomas Alva Edison has been the scene of active work during the present period of interest in the Roentgen discovery. Mr. Edison early began his investigations on the subject, feeling that he needed but one or two weeks to determine the controlling factors of success. As guide he had Roentgen's original paper, and his path seemed short and clear. Now, after two months' active work, his goal is reached, and he has succeeded in devising a simple apparatus by means of which the skeleton of the limbs may be observed as in a photograph.

His work has taken two principal directions —one the perfecting of the Crookes tube; the other the production of an apparatus, the fluoroscope, for enabling the X-ray phenomena to be observed directly without the intermediation of photography. After endless trials with different glasses, shapes and sizes of Crookes tubes and disposition of electrodes, he has adopted as final shape an ellipsoisdal tube about five inches long. At each end are internal disk electrodes of aluminum slightly inclined to each other. The outside of the tube ends are coated with metallic caps, forming external electrodes. Of the effect of such a tube, about 60 per cent. is due to the internal electrodes and about 40 per cent. to the external ones. He next found that at a particular point of exhaustion the effect was best. This point is when the band spectrum begins to disappear and the spectrum becomes continuous. Accordingly he has adopted the system of using a tube sealed at the ends and with a short tube entering its side. The latter enables connection to be made with an air pump of the Geissler or Sprengel type. After connection with the pump, about half an hour's exhaustion gives the vacuum best for development of the X-rays, the object being to hold the exhaustion at the point of maximum during the period of observation.

One very curious tube experimented had

internal wire electrodes only, and these were sealed into a rod or tube of glass extending from end to end of the tube. This tube gave good X-ray effects, although the electrodes were embedded in glass. In another experiment, a metallic tube half an inch in diameter and two feet long was provided with a metallic shield at one end. The shield end was placed against a plate-holder containing a photographic plate. The other end was pointed at the Crookes tube. It was found that whatever part of the tube the testing apparatus was pointed at, the X-ray produced the image of the aperture through the long steel tube. This showed that they radiated in all directions from an active tube.

Combination tube glass was chosen as material for the Crookes tube, which is blown as thin as possible. The second element of the problem reached was the fluorescent screen apparatus, its construction and fluorescing material.

Mr. Edison was early convinced of the importance of the visual as against the photographic method of observation. Dissatisfied with the barium salt used by Roentgen, he bent all his energies to the development of a new apparatus which should be superior in construction and fluorescent material to any yet suggested. During his researches he examined some eighteen hundred chemicals. To test them he used a pasteboard cylindrical box about two inches in diameter and four inches long, with a sighting hole in its bottom. His assistant started at his laboratory shelves and brought him, one by one, every chemical in the place. Some of the chemicals to be tested were placed in the inverted cover of the box, the inverted box was put in place over it, and Mr. Edison through the eyehole in the bottom looked down toward an excited Crookes tube. For four days and nights the tests went on, many salts were laid aside as fluorescent, but calcium tungstate proved incomparably the best—it is about eight times as powerful as platino-cyanide of barium.

The salt is made by fusing together a mixture of sodium chloride, sodium tungstate, and calcium chloride. The calcium takes up the tungstic acid, sodium chloride being the other product of the double decomposition. Treatment with water dissolves out the sodium chloride and leaves the insoluble crystals of calcium tungstate. These are dried and sifted. Such as go through a No. 30 mesh are the coarsest used. The largest are distributed over a pasteboard screen coated with wet celluloid varnish, then finer ones are added until a smooth, uniform surface results. The screen is mounted at the end of a sighting box of pasteboard, with the prepared surface inside. The other end of the box is shaped to fit the contour of the face around the eyes.

On holding the hand over the end of such a box, if X-rays fall upon it, the surface will fluoresce, except where the shadows due to the Roentgen effect are produced, with the same perfect detail that is seen in the best of Roentgen's photographs. One grain of tungstate per square inch of screen is required for the coating.—American Medical Compend.

The Use of Silver Wire.

Halsted, in an article on "Operative Hernia," states that for a year he has sewed all of his hernia wounds with silver wire and has covered them with silver foil. Without exception, the wounds have healed absolutely per priman. Not a single stitch-abscess has been observed either during or subsequent to the healing of the wound. Such absolutely perfect healing of the hernia wounds we have not had heretofore, and he is convinced that the use of silver as a suture material has contributed somewhat to this result. The effect of silver on the growth of the more common pyogenic organisms has been tested. He states that he has two Petri plates which Dr. Bolton has kindly prepared for him. They have both been inoculated with staphylococcus pyogenes aureus. In the center of each plate is a piece of silver foil, such as is used in our wounds. Just outside, and completely surrounding the foil, is a perfectly clear zone several millimeters wide. Except for the clear zone and a slightly intensified zone just outside of this, the agar is quite uniformly clouded. The cloudiness is due to the growth of the micro-organisms with which the agar has been inoculated. Dr. Bolton has studied the effects of various metals on the growth of bacteria, and has recently read a most interesting paper on this subject before the Association of American Physicians. With cadium, zinc and copper Dr. Bolton observed that the inhibitory action was greater than with silver. Prior to his knowledge of Dr. Bolton's experiments, Dr. Halsted tried to use copper and brass foil as a protective and copper and brass wire for sutures, but these metals corroded the tissues so much that he soon stopped using them. We do not hesitate to employ buried sutures of silver wire in sewing tissues on the confines of an infected region. In cases of acute suppurative appendicitis, for example, we close the wound in the abdominal wall with deep, interrupted, buried sutures. These wounds are drained by a few strips of gauze. Two of the sutures are taken very close to this gauze, and sometimes must pass through tissues which are infected. Not even in such cases has a stitch-abscess ever occurred. Once a silver stitch and once a silver bone-plate, having been exposed to view and to the air by necrosis of the overlaying tissues, were al-

lowed to remain and to become embedded in the granulations of the wound, which healed by suppuration. Neither the stitch nor the plate at any time caused the slightest disturbance in the tissue or inconvenience to the patient. Much has already been observed in the use of silver wire that is worth recording, and enough to satisfy us that it will play a new and more important role in the surgery of the near future.—Boston Medical and Surgical Journal.

Rupture of the Liver.

At a recent meeting of the College of Physicians of Philadelphia, Dr. William J. Taylor presented a specimen which was obtained from a boy sixteen years of age. He was standing holding a horse which was attached to a wagon backed up to the sidewalk at right angles to a trolley track. A car struck the wagon, knocked it over upon the boy, and pinned him to the ground.

When taken to St. Agnes' Hospital there was very great shock, but no external evidence of injury. He had a great deal of difficulty in respiration, which was very rapid, and a very quick pulse. He lived for twenty-two hours after the accident.

When Dr. Taylor saw the boy the night of his admission to the hospital he was in such a profound shock that nothing could be done in a surgical way, and there was evidently some serious internal injury. Other than this no diagnosis was made.

The post mortem showed a very extensive rupture of the anterior surface of the liver. When the chest was opened the right pleural cavity was found filled with clotted blood, and the root of the lower lobe of the right lung was torn through. The other organs were normal; the peritoneal cavity was filled with blood, and the stomach and intestines were enormously distended.

Dr. White said that one would suppose that such a rupture would be followed by immediately fatal hemorrhage. It is hardly to be thought that any surgeon would venture in a healthy liver to make an operative wound of the size and depth of the rupture in the specimen presented and hope to restrain fatal bleeding.

Dr. W. J. Taylor referred to one case in which the liver was intentionally wounded by Dr. Keen when he removed a tumor a few years ago, but Dr. White recalled the fact that in that instance the division of tissue was done by the galvano-cautery.—Annals of Surgery.

God is the restorer of health and the physician puts the fee in his pocket.—Italian.

Miscellany.

The Country Doctor.

The country doctor! Let the bard
Whose lyre is tuned to idle praise—
His locks unshorn, his face unmarred
By sweat and grime, his hands unscarred
By daily toil—in dulcet lays,
In empty word and hollow phrase
Recount the annals of the great;
Let him record and celebrate
Their noble deeds; their pomp and state;
Their wisdom—all, perpetuate.
A humbler theme to you I bring—
The smell of flow'rs, the breath of spring,
The flutter of the bluebird's wing—
And with it all I bring to you
The country doctor, good and true.

The country doctor! Him whose life,
From sun to sun, is daily rife
With bootless toil and ceaseless strife;
Whose sturdy frame is made to feel
The summer's flame, the winter's steel—
I come to sing in praise of him.
His soul is fat; his purse is slim;
His eyesight keen; his foresight dim—
For caring naught for power or pelf,
While there's a crust upon the shelf,
He works for fun and boards himself!

Ah! ye, who traverse city streets,
On swaying springs and cushioned seats,
The difficulties that he meets—
The bumps and jolts—ye little know,
Through seas of mud, o'er wastes of snow,
Where icy tempests howl and blow,
In pouring rain, where torrents flow
And sheen and shadow come and go,
Astride the sorriest of nags
And armed with spur and saddlebags,
He onward works his weary way;
And be it night or be it day,
He never falters nor looks back
Adown the steep and rugged track,
But sets his teeth and onward plods—
Himself a clod among the clods!

I've said—"A clod among the clods."
'Twere better—"God among the Gods!"
For sacrificing hours of ease
And striving hard to do and please
And winning but the dregs and lees
Of life's sweet wine, he fights disease
With clenched hands and bated breath—
And knows no conqueror but death.
It shames me not to tell the truth—
An unkempt, muddy god, forsooth!
Besmeared, bespattered, leggings, suit—
From crown of hat to sole of boot,

And ofttimes tumbled in the wave
That seems to yawn a watery grave,
He bobs serenely on the flood
And swims about the sea of mud.
For lo! his pockets are so light
He cannot disappear from sight!

No scientific friend has he —
Who ends his name "A. M., M. D."
Or tacks thereto a "Ph. G."—
To help him in perplexity,
And earn them both a handsomé fee;
But when he finds a knotty case,
A problem that he dare not face,
He sends his patient off to town
To some physician of renown.
(God save the mark! All, all are great
Who dwell within the city's gate!)
And this great man dilates his eyes
And rubs his hands, looks wondrous wise—
And nimbly gobbles up the prize!
The city doctor counts his gold,
Makes fresh deposits in the banks,
And sends the country doctor, old—
A neatly worded note of thanks!

To church the city doctor goes,
(Ye need not smile and wink at me
And strive his spotless name to smirch;
I'm told on good authority
The city doctor goes to church)
To take an hour's profound repose,
To hear the gilded organ ring,
To say his prayers and nod and doze
And see the sweet soprano sing;
The organ peals; the tenor squeals—
Great Scott! how good that doctor feels.
The selfsame hour, the selfsame date,
The country doctor—sport of fate—
Moves up some gully's rocky course,
Astride his rhubarb-colored horse.
The only anthem that he hears,
The only tune that greets his ears
Is murmured by the evening breeze—
Which moans "Old Hundred" thro' the trees!

The city doctor spends his days
In crowded marts and traveled ways;
At night he sees the latest plays,
And rests his half enchanted gaze
On some new "star" that lights the stage—
A star of most uncertain age,
Of whom the critics rant and rage.
The country doctor, poor, despised—
His purse half-starved and undersized—
Contents himself to stay at home;
The only stars he ever knows
Are those that rest in heaven's dome
And light the waste on winter snows.

The country doctor! Blessed be he
Who sets the weary suffr'er free
From burning fever, raking pain
And countless ills—and does it, too,
Without a thought or hope of gain;
Without a single cent in view!
I come to sing in praise of him
Whose soul is fat, whose purse is slim;
Whose eyesight keen, whose foresight dim,
For caring naught for fame or pelf,
While there's a crust upon the shelf—
He works for fun and boards himself.
—From the Ohio State Journal.

Iowa State Association of Railway Surgeons.

We are requested to announce that owing to the meeting of the Masonic Grand Chapter, the date of meeting of the Iowa State Association of Railway Surgeons has been changed to October 7 and 8, 1896.

A sporting character, fond of his mare, used to call the animal "his dear Flora." One day his dear Flora threw him and a wag observed of the accident, "that it was a shocking thing—Mr. S.'s Flora had miscarried."

Physicians, of all men, are most happy. Whatsoever good success they have, the world proclaimeth, and what faults they commit the earth covereth.—Quarles.

An ill wrestler turned physician. "Courage," says Diogenes to him, "thou hast done well, for now thou wilt throw those who have formerly thrown thee."—Montaigne.

FOR SALE.

PRACTICE FOR SALE:—I offer for sale my practice in the county seat of one of the best counties in Iowa. Have been here for twelve years; am surgeon of the leading road entering the town; am medical examiner for six life insurance companies, etc. I simply require that my successor buy my office fixtures,—mostly new—worth $700. Purchaser must be reliable physician with few years' practice. Address "Z. V.," care RAILWAY SURGEON, Chicago.

Desiring to remove to the Pacific Coast, I offer my well-established practice of over 20 years to any physician who will purchase my real estate, situated in one of the most beautiful and thriving towns in Southern Michigan, and surrounded by a very rich farming country. The town is intersected by two important railroads, for one of which the subscriber is surgeon. The real estate consists of a fine brick house of eight rooms and two fine offices besides, attached to, and a part of, the residence. A fine well of the purest water, two cisterns, waterworks, etc. Fine garden filled with choice fruit in bearing, peaches, pears and apricots and small fruits, raspberries, currants, etc. Fine barn and other outbuildings, comparatively new and in the very best condition, all offered with the practice and goodwill at a very low figure for cash. Address "MACK, Surgeon," care RAILWAY SURGEON, Monadnock Block Chicago, Ill.

By reason of failing health, physician wishes to dispose of real estate and practice. Practice amounts to nearly $4,000 per year. No charges except for real estate. Address WM. D. B. AINEY, Montrose, Pa.

Desiring to remove to a warmer climate, owing to poor health, I offer my well-established practice of 11 years to any physician who will purchase my real estate; situated in one of the most thriving towns in the Platte Valley, in Central Nebraska, on main line of Union Pacific R. R., on which road I am the assistant surgeon.

The real estate consists of 2 lots "on corner," on which there is a fine artistic "modern" frame house, 8 rooms; stable 20x30, wind mill, tower and 30-barrel tank; nice blue grass lawn, trees and fine garden (all new); and all offered with my $5,000 practice and good will, at a very low figure. A part cash, balance on time. A very thickly populated country. Address "BOVINE," care RAILWAY SURGEON, Monadnock Block, Chicago, Ill

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THE RAILWAY EMPLOYES' HOSPITAL ASSOCIATION.*

By Dr. Geo. Chaffee, Brooklyn.

Founder and Ex-President New York State Association Railway Surgeons.

The history of this beneficent association dates back to the year 1869, when the late Mr. A. N. Towne, vice-president of the Central Pacific Railway, organized and put it in operation on that line. The association early became popular with railway men and its field of operation has been extended until the popular wave has reached the Atlantic coast via the Plant System and the C. & O. It has been thoroughly tested by conservative people, has become a fixed branch of the operating department and it is not at all likely that it will ever be abandoned. Prominent among the lines which have organized and are now operating the hospital association may be named the Great Northern, Northern Pacific, Union Pacific, Central Pacific, Southern Pacific, Denver & Rio Grande, Texas Pacific, Santa Fe, Missouri Pacific, Wabash, Big Four, Plant System and the C. & O. Steps are now being taken to organize this hospital association on the Erie Railway.

I am under obligations to Dr. W. H. Morehouse, chief surgeon of the Wabash Railway, for the accompanying photo of the Wabash hospital at Moberly, Mo., and for a brief description of the same, as follows:

"I send you by to-day's mail a photograph of our Moberly, Mo., hospital, with accommodations for about sixty patients. The dining-room, kitchen and nurses' sleeping rooms are in a building detached from the hospital building proper, but connected by a lighted and heated corridor. We thus have no kitchen odors in the hospital building. This photograph was taken immediately after comple-

* Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

tion of the building, when the ground was in a rough state. Since then we have a beautiful, smooth, well grassed lawn, and during last spring and summer it was the most beautiful I had ever seen.

"We are beginning the construction of a hospital at Peru, Ind., to replace the old one at that place which we are now using. This will be a singularly beautiful building; the basement is to be of cut stone; above that of pressed brick, a buff color; the roof to be of green tile. This building is to be situated on a piece of ground containing over two acres. I should have added that in the Moberly grounds there are three and a half acres."

DR. GEO. CHAFFEE, SURGEON TO LONG ISLAND RAILROAD.

There is a point from which the hospital system may and should be viewed, which is high and most worthy, and that is from the humanitarian standpoint. Looked at from this point, railway men should, without the aid of a glass, be able to see that with this system the welfare of the employe is being properly looked after. When an employe falls sick or is injured—where this system is in operation—he is promptly, and with care, removed to the company's hospital, an institution in which he is himself a stockholder and part owner, and in which, by his monthly assessments, his bills are paid in advance, an item of no small account. Employes are not all able to be treated in luxurious homes, but their cuts, fractures and injuries are just as sore and painful as though they were able to afford the best of everything. The simple adoption of this system on the part of the company, and the consent of the employe to the light monthly assessment, will place him in a position to receive and enjoy the very best treatment in the land, and when cured he will be discharged from the hospital and returned to his position at the earliest possible moment—free from debt.

The employes of our lines are on the train, constantly facing danger, and must meet the crash when it comes. Wrecks have occurred and will continue to occur "just so long as human agents are necessary in the manipulation of railways." And since this is true, we should neglect no particular whereby their horrors may be palliated. Is it not far better to be fully prepared for half a dozen wrecks along the line, than to have even one occur with no preparation whatever? The answer is short and easy, but we leave it unwritten. General practitioners, who are suddenly called to the scene of an accident, are often obliged to go poorly prepared for the work, and if to this we add lack of system, they are terribly handicapped in their efforts to relieve.

If we have adopted up-to-date and approved methods, and done our very best in applying the same, then we have done our duty, our conscience is clear, our minds at rest, and there will be little room for public criticism. The hospital association fund provides (1) an emergency box of simple dressings and soothing remedies on every train; (2) local and specially trained surgeons all along the line; (3) a chief surgeon to direct the efforts of local surgeons and for consultation; (4) a railway hospital or home, at convenient points, where sick and injured employes are cared for; (5) a relief car at division towns, with beds, stretchers, warm blankets, restoratives, anodynes, splints, surgical dressings and instruments for all emergency work.

With the association of the A. T. & S. F., the monthly assessments for the hospital fund are as follows:

"From employes' earning during the month:
$30 or less .....25 cents per month
$30 and less than $60...35 cents per month

$60 and less than $100..50 cents per month
$100 or over.....$1.00 per month

"The above deductions shall be made from total earnings as shown on pay rolls."

In his address as president of the National Association of Railway Surgeons, and in a more recent paper, which I trust will find a place in the Railway Men's Reading Rooms, Dr. W. B. Outten, chief surgeon of the Missouri Pacific Railway, says:

"The employes assert that they save money by paying the assessment which constitutes a hospital fund, as prior to its establishment, sick and injured employes were helped out by other employes and friends contributing to subscription lists carried about by the generously inclined, and that it was not uncommon for men to give, under such circumstances, fifteen, twenty or more dollars a year, for such a purpose. The men say that, while some might doubt the right of assessments, still this point is not now considered, in view of the benefit conferred upon those who really needed it. The hospital system has stood the test of time for many years and must certainly possess merit, as the compulsory elements of the assessments would, naturally, produce prejudice unless some redeeming virtue was constantly manifest. The small assessment is not deemed a burden by the employes, and the hospital system is viewed as a benefit.

"We maintain that a properly conducted hospital department upon a railway is more conducive to loyalty than any other existing form of relief association. It at least offers opportunity for the manifestation of that good will and consideration which a widely diverse and extended interest seemingly prevents. In the precincts of a hospital the manifestation of kindness, consideration and humanity are not subversive of discipline, but are at all times a gracious aid in treatment. A railway hospital partakes more of the nature of a home than it does of the cold nature of a general hospital. Its every element is based upon a thoroughly unselfish desire in providing the best possible elements of subsistence, treatment and results.

"We do not believe that it can be demonstrated that any relief association connected with any prominent railway can obtain from any hospital, not owned or rented, the same beneficial results in all directions, as the one under its own government and control. The peculiar influences of a railway hospital upon its patients should be seen before they can be thoroughly realized. Railway men are naturally clannish and they take pride in direct contact and in discussing the diverse experiences of their vocation; and it is in the nature of a curative measure for railway men to have their surroundings thoroughly railroadish, and as has been said before, the homelike element is the one which satisfies the railroad man."

In response to my request for a statement from employes in regard to their opinion of the hospital association, Dr. Frank H. Caldwell, chief surgeon Plant System, makes the following reply, which, with the letters from two railway men, speaks volumes in favor of the hospital association, and for which we tender our sincere thanks to the writers.

"Sanford, Fla., February 17, 1896.
"Dr. George Chaffee.

"In compliance with your request of February 8 I herewith inclose communications from Conductor L. K. Morris and Section Master J. E. Stokes. The former has been very ill with an attack of inflammatory rheumatism and has been in the hospital, as he states, some time. He is now convalescent and will soon be out. Mr. Stokes had an attack of typhoid fever, which came very near proving fatal. These two men are naturally grateful, and gladly wrote the letters, copies of which I inclose.

WABASH RAILWAY EMPLOYES HOSPITAL AT MOBERLY, MO.

"The majority of the employes appreciate the Hospital Department. I believe if it was put to a vote as to whether or not the system should be abolished, nine-tenths of the men would vote to continue it. Of course the track men and train crews derive more benefit from the service than any others. Therefore, I obtained statements from the head of the transportation service, and head of the roadway gangs, i. e., conductor and section master.

"Trusting this will meet your wants, I remain, Yours truly,
"Frank H. Caldwell, Chief Surgeon."

"Sanford, Fla., February 14, 1896.
"Dr. F. H. Caldwell, Chief Surgeon.

"Dear Sir:—I have been in Hospital No. 1 two months, suffering from rheumatism, and I will leave in three days almost well. Previous to this time, I have been employed by

this company five months and my hospital dues were $2.50, or fifty cents per month. I have always been in favor of compulsory assessments, and I do not see how a hospital, that is, a railroad hospital, could be operated successfully in any other way, and the assessment is so small I do not miss it. I would, under no circumstances, be willing to do away with the hospital. I am of the opinion that the hospital has tended to make the employes more loyal to their employers, and I think the general feelings of the conservative employes are greatly in favor of the hospital system.

"Respectfully,

(Signed) "L. K. Morris,
"Conductor."

"Sanford, Fla., February 15, 1896.

"Dr. F. H. Caldwell, Sanford, Fla.

"Dear Doctor:—By your request, I gladly write a few lines relative to your hospital system. I have always favored the plan of compulsory assessments of each employe; always advocated it, and shall continue to do so. I do not miss the assessment from my wages and consider it an excellent investment for any employe.

"Since the 9th of January, 1896, I have enjoyed the benefits of your hospital system, and in consequence shall always have a warmer and more proper regard for my employers. I think there is the kindest feeling among the employes toward the Plant System Hospital, and if there are those who do not advocate it, they need only to suffer the misfortune of sickness or injury, and receive the hospital benefits, to be made warm converts to your service. I heartily endorse it in its entirety.

"Respectfully,

(Signed) "J. E. Stokes,
"Section Master."

Dr. Geo. W. Hogeboom, chief surgeon of the Santa Fe, in his annual report to members of the association, makes use of the following language:

"There has been during the year a greater tendency for married men, especially those suffering from injury, to go to our hospitals for treatment instead of to their homes, and I cannot too urgently commend such action, as the chances of recovery and especially of more perfect recovery, are so much greater under the antiseptic treatment furnished in our hospitals, than through effort and often failure to furnish the same treatment at even the best of homes or boarding houses. Besides this, the surgeons of our hospitals are particularly skilled and practiced in the specialty of railroad injuries and ailments and their treatment in hospitals, which fact, together with the advantages of trained and careful attendance, should be the strongest kind of inducement for all classes of employes to avail themselves of hospital care.

"When it is taken into consideration that these injuries are many of them cases of the worst forms of fractures, contusions and lacerations, and the ailments are more often than otherwise in an advanced stage when reaching the hospital, on account of the employe remaining at his duties as long as possible, this is a very fine showing for the results of well organized hospital treatment for both injuries and sickness."

Speaking of the hospital association, Mr. Stevens, general manager of the C. & O., says:

"It is a model of equity and justice."

Mr. W. B. Doddridge, general manager of the Missouri Pacific Railway, says:

"It operates practically in securing and promoting harmony among all classes and conditions of employes in cases of injury and sickness, the preference, in almost every instance, being in favor of treatment at the hospital, or under its control. Better results are accomplished for sick and injured employes because of the superior facilities the hospital department secures for nursing and caring for the employes, and that at a nominal cost to the employe."

There is a feature of the hospital system which, if properly managed, should become very popular and useful indeed, and that is the transfer system. As yet we are not aware that the transfer system or interchange of patients is in practice between lines having their own hospitals. The transfer or interchange of patients from one system of hospitals to another would greatly increase the popularity and usefulness of the hospital association on such lines. The transfer system not only furnishes the employe with the best medical and surgical service in the land, including all specialists, without extra charge, but provides for him, when indicated, a luxury which only those of means can afford, viz., transportation, change of climate and private hospital service until well. Employes are not looking for positions in the hospital, but fortunate, indeed, is the one whose name is on the assessment roll of the company's hospital when he has need for the service, and especially so where the transfer system is in operation, for by it lives may be saved that otherwise would certainly be lost. Patients recovering from pneumonia, la grippe, rheumatism and other diseases of this class would be taken from the North to the sunny South. Typhoid, malarial

and swamp fever cases would be sent North or to non-malarial sections of the country. The unfortunate consumptive would seek the West and Southwest, where he might not only find relief, but in time, employment; results which he would very likely be unable to secure under any other circumstances. Bring the employe, sick with heart disease, who has been partaking of game and birds, from the plains and mountains to the railway hospital on the coast for surf bathing, clam bakes and shore dinners, and his diseased organ will recover, or at least its condition will be improved.

We would like to ask railway men if they know of any form of relief that will compare with or even approach the hospital association as it now stands? Add to this excellent system the transfer feature or interchange of patients and we have the highest order of charity ever devised by the human mind; a charity which does not humiliate, but which renders the employe independent, furnishing him with a service equal to any private service which his employer is able to secure. It is true that only a small percentage of cases would require this change, but when indicated it will be found to repay a thousand fold for any effort it may cost. Only the best is good enough for our faithful railway men.

On most of our great lines the relations between employer and employe are very close indeed. The employe is contented and satisfied, the employer is pleased with his men and proud of their work. There is an element of friendship or social feature of the very strongest character, and the desire for such to continue is mutual. Nothing could induce either employer or employe to propose a change which might disturb these pleasant relations. When we proposed the hospital system, which reflects the views of the members of the National Association of Railway Surgeons, to our eastern lines for consideration, we were fully conscious of the happy relations above described. We are not the ones to introduce or to propose a disturbing element at any time or place; we incline to the opposite most decidedly. In this matter we are sincere and firmly believe that the humane and beneficent hospital system which we here propose, will prove one of the strongest ties to be found in maintaining that happy union between employer and employe. The sun of railway surgery and of the hospital system rose in the West, but its brilliant light is rapidly breaking over the East.

"THE VALUE OF EXAMINATIONS OF SIGHT, COLOR SENSE AND HEARING IN RAILWAY EMPLOYES."*

By C. W. Tangeman, M. D., Oculist for the C. C. C. & St. L. Railway System.

For some years past navigation and railway companies, many of them, at least, have been recognizing the importance of examining the eyes of their employes. Devices are patented, and machinery and equipment perfected to reduce the danger of travel and traffic to a minimum, and yet not one will dare to dispute the statements that the requirements that should be exacted of railway employes must necessarily become more and more rigid, in fact, keep pace with the improvements above mentioned. In no capacity of man's employment to-day, do we find it more necessary to select men fitted mentally and physically for their position than in high grade railroading.

No matter what the inventive genius may do in the way of inventing machinery to increase speed, to perfect automatic devices in signally, it will require the guiding hand of man to direct it all. No automaton can be placed in the cab. Dismiss the train crews of the most perfect railway system of to-day and replace them by employes of 40 or 50 years ago, and imagine the result! Men are demanded that are physically perfect; their senses should be acute and their intellect clear, and with all these requisites, long training is necessary to make a good railroad man. Navigation and railway companies have in latter years recognized the importance of determining whether their employes possess sight enough to see form at a sufficient distance, whether they have sufficient range of vision to read orders and rules clearly, whether their color sense is sufficiently acute to readily and correctly determine signals by day or night; and lastly, whether their sense of hear-

* Read at the ninth annual meeting of the National Association of Railway Surgeons, St. Louis, Mo., May 1896.

ing is acute enough to receive orders by word of mouth. In some of the states it is statutory law that railway employes must be tested at certain intervals, and no man is to be employed unless he has been tested and is known to possess perfect color sense and good vision. To employ a man who is color blind is a violation of this law, and is punishable by a fine of one hundred dollars. Strange as it may seem many railroads oppose every measure to adopt a uniform standard of color test or any test at all. Opposition was even known to emanate from the ranks of this body, the medical advisors of railway corporations. These conditions are happily changing, roads that have never examined their men heretofore are now making inquiry as to methods, rules and requirements. Having just completed an examination of the employes of the Big Four Railway System, which controls about 2,400 miles of line and employs nearly 5,000 men who handle signals, it occurred to me that to point out the results obtained and the methods used in a brief way, might act as an argument or as an inducement with those who are still in doubt whether railway employes should be tested. All examiners have recognized the importance of adopting some method that is simple, in order that a committee of laymen can make the preliminary tests, under the direction of the division superintendent. In order to accomplish this I had a number of meetings with all of the division superintendents and their train dispatchers, under whose immediate supervision these tests were to be made. I explained to them the object and principle of the various tests, and how to bring out the best results and record the condition found, so that the surgical expert to whom all of these papers were to be submitted could act intelligently. I adopted the form of record blank, devised by Dr. Thomson, with a few modifications, I formulated rules of instruction governing all of the tests, and had them printed on the reverse side of this blank, so that doubtful questions could be referred to at all times. They are brief, and read as follows:

RULES GOVERNING THE TESTING OF EYES AND EARS.

No. 1. All test types for distant vision should be placed in a good bright light, twenty feet away from the applicant. Each eye must be examined separately in all tests, and the result so recorded.

No. 2. If the applicant can read but the first line, record it as 20-200; the second line as 20-100; the third line as 20-70; the fourth line as 20-50; the fifth line as 20-40; the sixth line as 20-30; and the last line as 20-20.

No. 3. Each eye must be tested separately for reading the small type. Nos. 1, 2, 3, 4. Record the shortest and greatest distance that this type can be read. Never use a soiled card.

No. 4. Field of vision: Take a piece of pasteboard, about one foot square, with a circular opening in the center one inch in diameter, and place against a window light at the height of the applicant's eye and at a distance of one foot from him. Direct him to look through the circular opening in the card, at some distant object, and while in this position see how far to right, left, up and down he can see some small object, as the end of a piece of chalk, when moved over the surface of the card.

No. 5. Color Test: Place the applicant in a good light. Throw the first skein marked "test" across the stick. Have the applicant select the colors that match the test in the first division. Record the numbers selected. Repeat this test with the second and third divisions on the stick.

No. 6. Have the test colors named separately. Record whether he selects and names these colors promptly. Have him name the color of the flags used as signals, and mention their use and match the color of the flags with yarns on the stick. He must not be permitted to hold two colors together for comparison.

No. 7. Hearing: Test the applicant in a quiet room. Test each ear separately, both with the watch and conversation, and record the result in inches and feet.

Every new applicant for a position must submit to the above tests before being given employment.

No. 9. Should the applicant not see more than 20-40 (the fifth line) with each eye, he must be at once suspended and referred to the oculist for a more thorough examination. Do not have more than one person present during an examination, and keep your woolens and test cards clean.

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at 5 meters through the 1 mm. opening; if the man sees them only after the apertures have been increased, his color sense must be defective. Thus, if an opening of 20 mm. is needed, the color sense equals 1-20; should the man fail with the 20 mm. opening at 5 m. he is told to approach it, and if he sees it one-third of m., or one foot, he has only at 1 m. he has 1-100 of color sense, and if at 1-300 of the normal power.

By means of this instrument we are enabled to quickly, and positively, convince friends and officials of the man's ability to recognize colors, which is a very frequent necessity. I have not found an instance where the result of the tests with the lantern and the yarns did not agree. Whenever an individual cannot recognize these different colors, or cannot distinguish between them, he is not a safe man to put in charge of a train. Lastly, the original "Holmgren test" was resorted to.

When men are found not to be color blind with the above three tests, we are safe in permitting them to return to their work.

Hearing should be tested with a stop watch, which should be heard at a distance of five feet. The conversation test is the most practical, and on this the question of hearing should be decided. A man should be able to hear an ordinary conversation at a distance of at least 15 feet with each ear. Every test should be made in private, so that men do not become confused. The blanks when filled out by the examining committee are at once sent to the expert, who should look them over carefully. Those that fulfill every requirement are approved and returned to the superintendent, who then issues his certificate. Such as fall below the standard requirements in any part of the examination are sent for and tested by the specialist. Men are protected from the errors of the lay examining committees and do not lose their places until pronounced deficient by the expert. We can safely say, that a layman can detect color blindness, but he might treat some men unfairly who are fit, or who can be fitted by treatment.

I next formulated a standard of requirements for the employes of the various departments, that was adopted by the management of the Big Four Railway System. I beg to read such parts of these requirements as would interest the medical man, and invite criticism by those who are familiar with the practical part of this subject.

ENGINEMEN.

1. Must have perfect color sense both for day and night signals.

2. Must not use glasses in the cab except for reading purposes.

3. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other.

4. An employe otherwise thoroughly competent, with one perfect eye, may be continued in the service, but must be examined every six months by the company's oculist, and if deemed necessary by the division superintendent he may call for further examinations in addition to those already provided for. It is incumbent upon the division superintendents to see that semi-annual examinations as herein provided, are made.

5. Must be able to read and write the English language.

6. Must be able to hear with each ear an ordinary conversation at a distance of fifteen feet.

FIREMEN.

1. Must have perfect color sense both for day and night signals.

2. Must not use glasses.

3. Must be able to read test card 20-20 (perfect) with one eye and 20-50 with the other.

4. An employe otherwise thoroughly competent, who has lost the sight of one eye in the service of the company, may be continued in the service if the other eye is perfect, but must be examined as required by rule No. 4 under the head of "Enginemen."

5. Must be able to read and write the English language.

6. Must be able to hear with each ear an ordinary conversation at a distance of fifteen feet.

CONDUCTORS.

1. Must have perfect color sense both for day and night signals.

2. Must be able to read test cards 20-20 (perfect) with one eye, and 20-50 with the other, or 20-40 with each eye.

3. May use glasses to bring their vision up to the above standard.

4. An employe otherwise thoroughly competent, with one perfect eye, may be continued in the service, but must be examined as re-

quired by rule No. 4 under the head of "Enginemen."

5. Must, with the use of glasses if necessary, have perfect near vision enabling them to read and write the English language readily and distinctly.

6. Must be able to hear with each ear an ordinary conversation at a distance of fifteen feet.

TRAIN BAGGAGEMEN.

1. Must have perfect color sense both for day and night signal.

2. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other, or 20-40 with each eye.

3. May use glasses to bring their vision up to the above standard.

4. An employe otherwise thoroughly competent, with one perfect eye, may be continued in the service, but must be examined as required by rule No. 4 under the head of "Enginemen."

5. Must, with the use of glasses if necessary, have perfect near vision enabling them to read and write the English language readily and distinctly.

6. Must be able to hear with each ear an ordinary conversation at a distance of 15 feet.

BRAKEMEN.

1. Must have perfect color sense both for day and night signals.

2. Must not use glasses.

3. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other.

4. Must be able to read and write the English language.

5. Must be able to hear with each ear an ordinary conversation at a distance of 15 feet.

YARD FOREMEN, CONDUCTORS AND BRAKEMEN.

1. Must have perfect color sense, both for day and night signals.

2. Must not use glasses.

3. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other.

4. Must be able to read and write the English language.

5. Must be able to hear with each ear an ordinary conversation at a distance of 15 feet.

OPERATORS OR EMPLOYES PERFORMING THE DUTIES OF AN OPERATOR.

1. Must have perfect color sense, both for day and night signals.

2. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other, or 20-40 with each eye.

3. May use glasses to bring their vision up to the above standard.

4. An employe otherwise thoroughly competent, with one perfect eye, may be continued in the service, but must be examined as required by rule No. 4 under the head of "Enginemen."

5. Must be able to hear with each ear an ordinary conversation at a distance of 15 feet.

TRACK AND BRIDGE FOREMEN.

1. Must have perfect color sense, both for day and night signals.

2. Must be able to read test cards 20-20 (perfect) with one eye and 20-50 with the other, or 20-40 with each eye.

3. May use glasses to bring their vision up to the above standard.

4. Must be able to read and write the English language.

5. Must be able to hear with each ear an ordinary conversation at a distance of 15 feet.

6. Will be held responsible for the proper use of signals in the hands of employes whom they send out to do the flagging.

GENERAL.

1. All applicants for promotion or employment must have perfect color sense for both night and day signals.

2. Must be able to read test cards 20-20 (perfect) with each eye.

3. Must be able to read and write the English language.

4. Must be able to hear with each ear an ordinary conversation at a distance of fifteen feet.

5. Regular examinations must be made during July of every second year.

6. Semi-annual examinations, as hereinbefore provided, must be made in January and July of each year.

7. Examination papers must be forwarded promptly to the company's oculist for approval. If approved they will be returned to the division superintendent direct. If not approved they must be forwarded to the general superintendent.

8. Certificates will not be issued by superintendents until the examination papers have been approved.

9. Nothing in the foregoing rules shall pre-

vent the promotion of employes who are defective in sight or hearing, and otherwise competent, to positions in other departments where the use of the signals are not required.

Governed by the above rules, about 5,000 men were examined and made to comply with the standard adopted by the management. The result was that nearly 8 per cent. of this number were found to be defective according to the papers of the lay committee. These men were now called to my office and examined carefully in every detail. I found 67 cases reported color blind. Out of this number there were 48 real cases; the other 19 were errors, a little less than 1 per cent.; 10 cases of defective hearing were reported, 2 of which were real and 8 apparent; 254 cases were reported for defective vision, 95 were errors, while 159 had some defect. Out of this whole number 69 men were discharged, 48 for color blindness, 2 for defective hearing, and 19 for defective sight. All of the color blind cases were re-examined at a subsequent time, but in not a single instance was the first record reversed. In the beginning of this work there was a great deal of opposition on the part of the men, but that gradually wore away, and at the present time I am safe in saying that no one is opposed to it. You not infrequently hear the statement made that there is no case on record where a wreck or damage resulted because of the color blindness of an employe. In the first place this statement is not correct, and in the second place, even if we could not show a case of this kind, no sane man would advocate the retention in service or the employment of an engineer who is positively color blind and not able to quickly and correctly recognize the signals on which the safety of the train depends. If this is true of an engineer, it is equally as dangerous in the instance of any man who has anything to do with the giving or recognition of signals by day or night.

DISCUSSION OF DR. TANGEMAN'S PAPER.

Dr. J. M. Ball: I believe there are several gentlemen here much more competent to discuss this excellent paper than myself. The subject of color blindness is one of great interest, and has been thoroughly covered by two or three of the papers which we have had at this meeting.

Dr. C. D. Wescott: I have been very much interested in the paper to which we have just listened, and I admire the Doctor's system of making the examinations. It seems to me that when it is possible for the laity to commit as many errors as reported by the Doctor in these examinations, that that alone is an indication that the primary examinations should not be intrusted to laymen. I think the local surgeon should make the first examination, and if possible he should have experience in ophthalmic work. I was very glad to notice the plan the Doctor suggests for measuring roughly the field of vision. We all know that the applicant may have most excellent central vision, yet a defective field will make him a dangerous man. That is a very important test, and it is not usually applied.

In regard to the matter of glasses there has been a good deal of discussion. I feel that the Doctor is very fair in the allowance he makes in this direction. I do not believe any engineer or fireman should be employed who must wear glasses for distant vision. I know that it works great hardship to discharge a conductor who must wear glasses in order to have good vision, but he should doubtless have 20-40 vision in one eye without glasses. On some roads these men are not permitted to wear glasses while on duty. I know a conductor on the Rock Island road who has vision without glasses equal to 21-100 in each eye, and with glasses about 20-30 with each eye. He wears glasses constantly when off duty, but does not dare to be caught on duty with these glasses. With such defective vision there might arise an occasion when he would be a dangerous man without glasses. I do not think a man should be employed unless he has 20-40 vision in either eye without glasses.

The apparatus which the Doctor has shown for the measuring of color sense is as simple a scheme as we have. I think, though, that the apparatus which Dr. Williams showed us a year ago is a more practical one. If we use lanterns, such as are in daily use on the track, for tests, we must have some means of varying the degree of light.

Dr. Tangeman (closing): There is very little I have to say in closing this discussion. First, with regard to glasses, and compelling men either to lose their job or being able to see

a certain amount, it seems a hardship, it is true, but the reason why the management of this road ruled out glasses was this: A brakeman, for instance, has an important position, particularly a freight brakeman. He is exposed to more or less danger in climbing up on the freight cars. Accidentally he loses his glasses after being accustomed to the use of them and learning to depend on them to see at a distance. Everyone of you have lost your glasses and know the inconvenience, but a freight brakeman is more liable to lose his glasses than you are, because of the kind of work he has to do. Are we to endanger the safety of a train or crew because of the retention of one single employe who may be defective in vision? The company can better afford to put some of these men on the retired list and pension them for life, than to retain them if they are dangerous men. No man but the operator, the baggageman and conductor are permitted to wear glasses, and they begin to wear them as soon as vision is defective. If he goes without them he is afraid he will be discharged; he should be supplied with two pairs, so that he has another pair with him should he lose the other. One of our rules is that no man (making an application for a position) shall be accepted unless he has absolutely perfect vision in both eyes—20-20—it makes no difference what position he applies for. In this way we will have a good body of men after a while. You will have noticed from the statistics that have been read that the percentage of color blind cases in this test is very low. I presume because all of these men had at some previous time been examined by a lay committee.

I agree with Dr. Wescott that it is absolutely essential to take the examination of the eyes out of the hands of a lay committee and put it into the hands of the expert surgeon. This should be done because of errors and misunderstanding, and the only thing that would answer instead, it seems to me, is the preliminary examination of these men by a lay committee. Then refer all of the papers or examination blanks to an expert for approval.

Such an aversion and contempt for all manner of innovators, as physicians are apt to have for empirics or lawyers for pettifoggers.—Swift.

THE DEFLECTED SEPTUM AND ITS SURGICAL TREATMENT.*

By Jno. A. James James, B. Sc., M. D.

Professor of Diseases of the Ear, Nose and Throat in the St. Louis College of Physicians and Surgeons. Laryngologist and Rhinologist to the Missouri Pacific Railway Hospital, to the St. Louis Baptist Hospital, etc.

In choosing a subject for a paper before your association, I have been guided by the knowledge that it was to be read before an assembly of practical surgeons—before a body of men whose daily work lay in the performance of formidable and serious operations. I feel that it is largely due to the influence of the general surgeon that the treatment of the obstructive diseases of the upper respiratory tract has been rescued from its former thraldom in the hands of specialists whose endeavors were limited to ringing long and wearying changes upon various sprays and other local applications, which left the patient, at the end of his treatment, exactly where he was at the beginning. We have come to realize that upon active surgical intervention depend most of the successful results of treatment in this special field of work. This fact has been particularly apparent in the matter of deformities of the nasal septum, and it is to this purely surgical matter that I invite your attention this afternoon.

If we inquire into the causes of deflection of the septum, we are struck by the number and variety of agencies asserted to cause the deformity. Among these are many utterly unworthy of serious consideration. Indeed, when one studies his cases, he is soon convinced by an almost unvarying history of an injury to the nose that the cause of the deflected septum may be said to be almost always purely traumatic. In the majority of cases the history is a clear one. In others it is not. Yet these latter are easily accounted for when we consider the number of bumps and falls that attend our early attempts at walking. An injury too slight to injure an adult nose may easily produce a slight deflection in that of a child, which, increasing with time, becomes a marked deformity as manhood is reached. Indeed, so common are these deformities that it is extremely rare to find an adult male with an entirely normal septum; and a close inspec-

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

tion of the half dozen noses nearest us will show that perhaps not a single one of them occupies the exact median line of the face.

Just what deformity of the septum will result as the effect of the injury inflicted must depend upon the character and point of application of the blow. We see those cases wherein, as the result of a powerful blow, not only the cartilaginous, but the bony portion of the septum has been forced to one side. Others again show only a displacement of the cartilage of the septum at its lowermost point, the sharp border of the cartilage projecting into

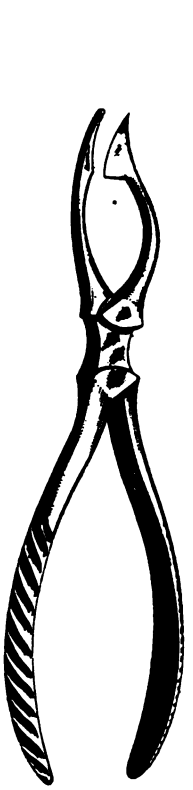

FIG. 1.

FIG. 2.

the lumen of one of the nostrils, producing more or less occlusion on that side. In the majority of cases, however, of true deflection, we are concerned with the deformity which involves the entire cartilaginous part of the septum, the deviation involving but slightly the upper and bony portion. With the various forms of septal spurs, ridges, etc., it is not the purpose of the present paper to deal.

A well defined deflection of the septum sufficient to occlude one or both of the nostrils even a portion of the time, is fraught in the vast majority of cases with a long trail of evils, which it is our purpose briefly to notice. A septum may be forced to one side and in contact with the turbinate bodies of one of the nostrils. This, while it occludes the one nostril, leaves an excess of space on the other side. Nature abhors a vacuum. She attempts to fill up the vacant space. The turbinates undergo a compensatory hypertrophy on that side, and, in a varying length of time, both nostrils are partially or completely obstructed. Let us study some of the effects of this interference with nasal respiration. We are likely, from our long continued habit of regarding the nose mainly as an organ of smell, to forget its far more important and necessary functions, namely, those of moistening and warming the inspired air, and of assisting in voice formation. We find, then, depending upon the degree of nasal obstruction, a more or less completely enforced habit of mouth-breathing, both when asleep and awake. The inspired air, not properly moistened, passes over the mucous surfaces of the fauces, larynx and bronchii, drying them and rendering them irritable and inflamed. Meanwhile, the natural drainage being interfered with, the patient finds himself annoyed by the presence of an excess of mucus. The usual attempt to dislodge this is by a vigorous blowing. To blow an obstructed nose with all the force of a powerful pair of lungs, is to force the air somewhere; and the eustachian tube feels the force of a strong blast of air as often as the obstructed nose is vigorously blown. Conversely, at each effort to swallow, as all of us may feel by pinching our nostrils together and swallowing, there is a rarefaction of the air in the eustachian tube and the tympanic cavity. In other words, a continued performance of the so-called Toynbee's experiment, broken at intervals by a Valsalvan inflation when the patient blows his nose. The inter-dependence of nasal obstruction and middle-ear disease is too well known to be further referred to. When we add to the above results of nasal stenosis, the frequent existence of severe headaches of clearly demonstrated nasal origin, the loss of purity of certain tones of the voice from the same cause—when we consider at once the discomfort of the individual and the harmful results that accrue from a neglect of this condition—we cast about us for the best means for relief from the trouble.

It is not my present purpose to recite to you

the various and widely differing operations that have been put forward for the relief of the deflected septum. The very variety of the procedures tells in unmistakably clear language how unsatisfactory they have all proven. I wish to call your attention to an operation which does result in a satisfactory cure of the condition, and a relief from the deformity and inconvenience that arise from the existence of the trouble. This procedure has become known as the Asch operation, having been devised by that well-known operator and modified by his associate, Dr. Emil Mayer. The instruments, which are somewhat elaborate and, for intranasal work, I must admit, somewhat formidable, are before you, and the steps of the operation are as follows: The patient is given a general anæsthetic and the angular shears, (not illustrated. Like Fig. 1, but bent at right angle.) of which you observe there are two pairs, according as the convexity of the

FIG. 3.

septum is toward the right or left, are introduced and the septum cut entirely through at its point of greatest prominence. The scissors are now turned and another incision made at right angles to the first. The forefinger is now introduced into the obstructed side and an attempt is made to push the softened septum over to the median line. Several prominent angles will be found projecting into the lumen of the nostril. These are reduced by the use of the straight-cutting scissors (Fig. 1), of which you observe two sizes, a large and small pair. When the septum has become entirely and completely plastic, it is placed in the median line by the use of the Mayer straightening forceps (Fig. 2), the operator assures himself that the passageway back to the pharynx is clear and free from synechia on both sides, and the drainage tubes (Fig. 3), are inserted. The hemorrhage, which, up to this point, has been very free, is at once entirely controlled by the slight pressure exercised by the tubes. You will observe that the drainage tubes are of red vulcanite, smoothly polished and perforated at numerous points. These tubes are made in varying sizes to fit nostrils of different capacity. I have had them made by an ingenious dentist friend by furnishing him with plaster of Paris models of the necessary forms and sizes. The reaction following the operation is usually not great, and the after-treatment consists in the frequent removal of the tubes and the flushing or spraying of the nose with some simple detergent solution. The tubes are then reinserted. Should this cause pain, a ten per cent cocaine solution may be sprayed into the nostril before restoring them to place. In a few days the shattered septum will have acquired a fair degree of firmness. The patient continues to wear the tubes, however, until the septum is firm and strong, a time lasting from three to six weeks. This entails but little inconvenience, since their presence is not painful at this stage, nor are they as noticeable as would be supposed.

I have already alluded to a compensatory hypertrophy of the turbinates on the side of the concavity of the septum. Before beginning the operation proper, just described, these hypertrophies should be thoroughly reduced by the galvano-cautery or removed by the cold snare, lest, when the septum is restored to the median line, the stenosis be simply transferred from the one side to the other.

If the details of this operation are properly carried out, the result is an eminently satisfactory one. Faulty results are most likely to occur from a too timid use of the scissors, and a consequent insufficient breaking up of the septum. In such cases the septum resists its reposition in the median line, and the tubes are retained with greater pain and difficulty. The greatest objection that can be urged against the operation is its somewhat formidable and sanguinary character. But this is more apparent than real, and is not a valid objection to the operator accustomed to making serious operations. It is not an operation which requires special knowledge of intranasal work, and since it is successful in its object of relieving nasal stenosis and its consequent train of evils, I urge that it is the best and the most practical operation we possess for the cure of the deflected septum.

It has happened to me on one occasion that the angular scissors broke in attempting to perforate a septum, the deflection of which was

unusually high up and composed largely of bone. I am indebted to Dr. Outten, who was present, for a suggestion of great practical value in such cases, namely, that the scissors be constructed with the Henckel joint, like the powerful pair of plaster scissors I have here, the gliding motion of the blade adding immensely to their strength.

2836 Lafayette Ave.

The Indications and Modes of Drainage After Abdominal and Vaginal Section.

The following from the pen of Nicholas Senn, M. D., of Chicago, is interesting and valuable:

Drainage of the abdominal cavity is an expression of the present imperfect state of surgery. It is often an unavoidable evil. It should be limited to appropriate cases, and it is, therefore, well that the indications for it should be laid down clearly, so that we may have eventually some definite rules that will guide the surgeon in his abdominal work. There are now no fixed rules. Some surgeons avoid drainage wherever possible; others drain as a rule. If I were permitted to pass my judgment on this question as a whole, I would say that the surgeon who has the ambition to operate quickly, to make an impression on the bystanders, should drain frequently; while, on the other hand, the surgeon who proceeds with his work carefully, step by step, with plans well laid out, with his practical knowledge resting on a firm pathological basis, will only drain in exceptional cases. After opening the abdomen the surgeon has frequently to deal with affections that absolutely call for drainage. There is no other course to pursue. He meets with pathological conditions that cannot be successfully removed; he meets with cavities, the walls of which it is impossible to extirpate, and consequently he proceeds to establish an abdominal fistula, a great consolation to the operator, because it enables him to do something, so that probably during the course of time Nature will come to his rescue, taking advantage of the temporary drainage, and eventually closing the cavity where drainage was established. One of these conditions is met with in a distended or diseased gall bladder. It is my firm conviction that the best success obtained in cases of disease of the gall bladder requiring opening of the organ, in the absence of a permanent occlusion of the common duct, is the establishment of an external fistula. This operation shows the greatest success, is attended by the least danger—in fact, it is almost devoid of danger if the surgeon is careful to prevent infection of the peritoneal cavity during the operation.

The next condition—one that is not so frequently met with (but there are now forty or sixty cases on record)—is cyst of the pancreas. A few bold surgeons have made the attempt and in a few isolated cases have succeeded in extirpating pancreatic cysts with a mortality of more than 50 per cent. Statistics show that the formation of a fistula usually results in a permanent cure in the course of a few weeks, and that a permanent fistula is the exception.

Very often the surgeon makes a mistake in diagnosis, opens the abdomen for a supposed ovarian cyst or an ovarian tumor of some kind, and is astonished, when he has exposed the abdominal organs, to find a retroperitoneal cyst, a hydronephrotic kidney. Many surgeons under such circumstances have resorted to the formation of an abdominal fistula, thus draining the distended pelvis of the kidney—a very unwise procedure, because a lumbar fistula will accomplish the same object, the formation of which is attended by less danger, and eventually, if it should become necessary, a nephrectomy is attended by a great deal of difficulty if previously the organ has been attached to the abdominal wall. So that I should lay down the rule that in hydronephrosis, whether diagnosticated before or during the operation, the surgeon should make a lumbar nephrotomy.

Then comes that large class of pelvic abscesses without removable walls; abscesses which have had their origin in the pelvic removable walls; abscesses which have had their origin in the pelvic connective tissue, perimetritic abscesses; abscesses originating within the fallopian tubes, and abscesses within or around the ovary, but in which the careful surgeon will make the most scrutinizing examination before he attempts the work of enucleation. If he finds enucleation impossible it would have been vastly better if he had dealt in a more conservative manner with his patient, and had resorted to abdominal drainage as taught us by Mr. Tait.—Am. Gyn. and Obstet. Jour., March, 1896.

Novel Method of Disposing of Neuromata.

It has been found that neuromata after amputation almost always appear in scar tissue, and are especially fixed against the sawn end of the bone. Senn endeavors to obviate this by amputating the nerve high up in the tissue, and then cutting a V-shaped wedge out of the distal end, uniting the two flaps with sutures so that none of the interior of the nerve-trunk is exposed—all nerve tissue is covered in by the endothelial sheath.—The Medical Age.

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THE RAILWAY HOSPITAL.

We publish in other columns a good paper by Dr. Chaffee of Brooklyn, in which he discusses at length the Railway Employes' Hospital Association and its benefits, especially to the injured and sick employes. We can hardly conceive the possibility of a difference of opinion among surgeons as to the desirability of the railway hospital system, and it seems to us that this paper of Dr. Chaffee's should be enough in itself to convince the most prejudiced railway man of the advantage both to the employe and to the management of such a scheme.

As Doctor Chaffee says, accidents upon the railway are inevitable, and we must have railway surgeons, and while we are all prepared to prove that good surgery can be done at the cross roads, there is no necessity for proof that railway surgery can be best done in well ordered hospitals, and if a road can own and manage its own hospital, or have a system of hospitals distributed along the line, all under one chief surgeon, and arranged and conducted after the same general plan, it must of necessity be productive of the very best work in the care of the sick and injured.

As to the economical side to the question, we believe it has been quite sufficiently demonstrated that, all things considered, this method of caring for those injured on the track is by far the best and cheapest.

While we are aware that on some roads the proposition to establish such a system and to assess employes for its support has met with opposition among the men, we believe it has always been due to a misunderstanding, because of faulty presentation of the plan and a misconception on the part of the employes of what was desired of them and what the benefits were to be.

Referring again to the paper of Dr. Chaffee, there is abundant proof such as he furnishes in the form of letters from railway men who have been patients in the hospitals, that when the system is fully comprehended and its benefits experienced by the men, all opposition on their part ceases and they are loud in their praises of the method.

We can conceive of nothing more desirable or more humane than the transfer system which Doctor Chaffee suggests, looking to the exchange of patients by various railway hospitals situated in the different parts of the country, and trust that the subject will be agitated until such a system is established. It is certainly a perfectly feasible thing, and, we believe, would so shorten the term of hospital life in many cases as to make it a real economy, as well as a true beneficence.

We have just received a reprint of an article by Dr. Frank H. Caldwell, chief surgeon of the Plant System, entitled "Transportation of Injured Employes," in which he gives a very good description of the hospital car used upon the Plant System for transporting patients from one hospital to another, and also from the scene of an accident to the nearest hospital. This seems to leave almost nothing to be desired for the immediate and continuous care of persons injured upon the railway. He says:

"It has been conclusively demonstrated that injured persons, except when suffering from severe and extensive injuries to the head, spine, thoracic and abdominal cavities, or in a state of profound shock, may, when properly handled, be transported almost an indefinite distance without endangering life or increasing the extent of injury. And it has been further shown by actual experience that a large percentage of the exceptional injuries above men-

tioned can be safely handled if proper transportation facilities are provided. In cases of lighter forms of injury, as a crushed limb, how should they be transported to the hospital in order that shock may not be induced or increased, or the already mangled parts be further injured?

"The nearest surgeon is sent for, and under no circumstances should the patient be carried to him. The messenger informs the surgeon as nearly as possible of the nature and extent of the injury, so that he may come prepared, for not all surgeons have emergency cases, ready for every kind of accident. The surgeon, upon his arrival, controls hemorrhage, anticipates or combats existing shock, and adjusts a temporary dressing. Briefly, he prepares the patient for his journey, whether it be long or short. After due preparation, the patient is lifted gently a few inches from the ground or floor, and a stretcher slipped under him, and he is lowered into it and made comfortable. He is then carried into a coach or baggage car of the first passenger train going in the desired direction. An injured man should never be transported by a freight train. If no passenger train is available in a reasonable time, a "special" should be provided. If the surgeon in attendance fears for the safety of his patient, the chief surgeon should be notified of the fact, and he should instruct the surgeons along the line to visit the patient as the train passes their stations and renders any assistance necessary.

"As a rule, upon arrival at the hospital, you will find your patient in condition to submit to any operation required for his relief. The plan above outlined in this class of cases, is the one practiced on the system which the writer represents, and furnishes the patient almost constant attention from the receipt of injury until he arrives at the hospital; the greatest distance between surgeons being forty miles, and usually but twenty.

"The comfort and safety of the patient will depend very much upon the stretcher in transporting him. The writer spent several years experimenting before one was secured which answered the purpose to the satisfaction of himself and patients. Photographs of the ones that have been in use upon our system for the past eight years are submitted for your inspection. It is made of cypress; a light, springy, yet strong, native wood. The stretcher will pass easily through a car door, and two standard car cushions placed end to end, fit it exactly, and can be used as additional protection when required. The bottom of the stretcher is of wire netting, two-inch mesh, and is covered with eight-ounce duck. The netting and duck are fastened to the frame with strips of wood which are screwed on, and enabling us to easily clean or repair the wire and duck. The legs fold under, and have heavy, corrugated rubber tips. This stretcher is light, strong, durable, and easily kept clean. It has sufficient elasticity to prevent undue jolting, but not enough to give pain. The writer has personally tested it, and can certify to its comfort.

"There have been several plans of ambulance cars proposed from time to time, but they have, in the writer's opinion, been too elaborate, entailing a large expense upon the company, the officials of which could not see a proportionate benefit; and in my judgment they have taken the correct view of the case. What we need is a strong, stiff car, with first-class trucks, furnished in the simplest style, without upholstery of any kind. We need a transportation room, an operating room, and a small consultation room.

"The transportation room is furnished with wrought-iron beds, with woven wire springs. Heavy, corrugated rubber tips are on the legs, which prevents slipping, and breaks the jar to a great extent. When not in use, these beds are fastened against the walls of the car, and are entirely out of the way. In addition to these, we have an air bed, which, when not in use, is folded into a very small compass, and packed into a closet. It takes but a moment to inflate it with air. Lastly, there is a hammock arrangement made to suspend from the roof of the car by strong straps. This hammock has a device of short, strong, spiral springs, which absolutely prevents any jolt or jar being communicated to the patient.

The operating room is supplied with an iron, glass-top table, and all necessary appliances for the treatment of shock, and for the performance of perfectly aseptic operations. Sterilizers, etc., are stored beneath the water tank, which is kept filled with sterilized water. All bedding, etc., are packed in the corner cupboard. Bandages, bottles containing chloroform, ether, etc., are in the center cupboard.

The car is painted with a specially prepared paint, which may be scalded without injury, and will stand disinfection by means of superheated steam or air."

Physic is of little use to a temperate person, for a man's own observation on what he finds does him good, and what hurts him is the best physic to preserve health.—Bacon.

A doctor is a man whom we hire for the purpose of telling stories in the chamber of a sick person till nature effects a cure or his medicine kills the patient.—Seward.

Some persons will tell you, with an air of the miraculous, that they recovered, although they were given over, whereas they might, with more reason, have said, they recovered because they were given over.—Colton.

Notes of Societies.

The French Surgical Association will hold its tenth annual meeting in Paris during the week ending October 24, 1896, under the presidency of Professor Terrier. The two subjects for set discussions are "The Surgical Treatment of Clubfoot," to be opened by M. Forgue of Montpelier, and "The Treatment of Prolapse of the Genital Organs," to be opened by M. Bouilly of Paris. The secretary-general of the association is M. Lucien Picque, No. 8 Rue de l'Isly, Paris.

The American Public Health Association will hold its twenty-fourth annual meeting at Buffalo, September 15 and 18. The following are the subjects proposed for discussion: The pollution of water supplies; the disposal of garbage and refuse; animal diseases and animal food; the nomenclature of diseases and forms of statistics; protective inoculations in infectious diseases; national health legislation; the cause and prevention of diphtheria; causes and prevention of infant mortality; car sanitation; the prevention of the spread of yellow fever; steamship and steamboat sanitation; the transportation and disposal of the dead; the use of alcoholic drinks from a sanitary standpoint; the centennial of vaccination; the relation of forestry to public health; transportation of diseased tissues by mail; river conservancy boards of supervision.

The American Electro-Therapeutic Association.

The sixth annual meeting of the American Electro-Therapeutic Society will be held in Allston Hall, Boston, Mass., September 29 and 30, and October 1, 1896.

Dr. Robert Newman, New York, president; Dr. R. J. Nunn, Georgia, treasurer; Dr. Emil Huel, 352 Willis avenue, New York, secretary; Prof. A. E. Dalbert, Tuft's College, Mass., chairman of the committee of arrangements. The following is the scientific program:

Address of the President, Dr. Robert Newman, New York City, "The Want of Education in Electro-Therapeutics in Medical Colleges."

REPORTS OF COMMITTEES ON SCIENTIFIC QUESTIONS.

"On Induction Coils and Alternators," Mr. A. E. Kennelly, Philadelphia, Pa.

"On Meters," Dr. M. A. Cleaves, New York City.

"On Static Machines and Condensers," Dr. W. J. Morton, New York City.

"On Constant Current Generators and Controllers," Dr. W. J. Herdman, Ann Arbor, Mich.

"On Electrodes," Dr. C. R. Dickson, Toronto, Canada.

"On Electric Light Apparatus for Diagnosis and Therapy," Dr. J. H. Kellogg, Battle Creek, Mich.

PAPERS.

"What Can be Done by Means of the Use of Electricity to Avoid Surgical Operations," Dr. G. Betton Massey, Philadelphia, Pa.

"Electricity in Chronic, Non-Suppurative Affections of the Uterine Appendages," Dr. F. Shavoir, Stamford, Conn.

Discussion by Dr. G. Betton Massey, Philadelphia, Pa.

"Electricity in the Treatment of Diseases of the Throat and Nose," Dr. O. B. Douglass, New York City.

"Electricity in the Treatment of Diseases of the Larynx," Dr. W. C. Phillips, New York City.

"Accidents and Risks in the Use of Street Currents. How Far are They Practicable and Safe in the Use of Electro-Therapeutics?" Mr. J. J. Carty, E. E., New York City.

Discussion by Mr. John J. Cabot, E. E., Cincinnati, O.

"Accidents and Risks in Using Electricity, Generated at Central Stations and Transmitted Over Underground and Overhead Wires to Operators in Electro-Therapy."

"Danger to Patients and Operators and How Prevented. Also Liability of Physicians Using the Same," Mr. John J. Cabot, E. E., Cincinnati, O.

"Experiments Upon the Effects of Direct Electrization of the Stomach," Dr. Max Einhorn, New York City.

"Electricity in Diseases of the Stomach," Dr. David D. Stewart, Philadelphia, Pa.

"The Static Current in the Post-Apoplectic State," Dr. John Gerin, Auburn, N. Y.

Lecture I: "The Electrical Principles Generally Used in Medical Treatment," Prof. William L. Puffer, Boston, Mass.

Lecture II: "The Relation of Physics to Physiology," Prof. A. E. Dolbear, Tuft's College, Mass.

"Electro-Therapy in the Treatment of the Nervous," Dr. W. S. Watson, Fishkill-on-Hudson, N. Y.

"The Role of Electricity in the Treatment of Uric Acid Diathesis," Dr. J. G. Davis, New York City.

"Some Observations in Electro-Therapeutics," Dr. D. R. Brower, Chicago, Ill.

"The Physics of the Production of the X-Rays," Mr. Edwin Houston, Ph. D., Philadelphia, Pa.; Mr. A. E. Kennelly, F. R. A. S., Philadelphia, Pa.

"Treatment of Strictures by Electrolysis versus Any Other Treatment," Dr. F. H. Wallace, Boston, Mass.

"The Newman Method of Urethral Electrolysis." Its advantages and reasons why some operators fail. Dr. Francis B. Bishop, Washington, D. C.

"Faradism in Gynæcology," Dr. R. J. Nunn, Savannah, Ga.

"The Motor Dynamo—Adapted to Electro-Therapeutic Work," Dr. W. J. Herdman, Ann Arbor, Mich.

Discussion by Mr. Edwin W. Hammer, E. E., New York City, and Dr. G. J. Englemann, Boston, Mass.

"The Application of Electricity to Surgery," Dr. J. W. Herdman, Ann Arbor, Mich.

"A Summary of the Ultimate Results in 86 Fibroid Tumors, Treated by the Apostoli Method," Dr. G. Betton Massey, Philadelphia, Pa.

"Some Experiences and Experiments in the Construction of High Tension Coils and Electrodes," Dr. Frank W. Ross, A. M., Elmira, N. Y.

"Electricity Considered in Its Relation to Surgical Gynæcology," Dr. O. S. Phelps, New York City.

"A Clinical Report of Case of Rectal Phlebitis Treated with Galvanism," Dr. D. B. D. Beaver, Reading, Pa.

"On the Electro-Therapeutics of the Constant Current," Mr. A. E. Kennelly, F. R. A. S., Philadelphia, Pa.

Title to be announced, Dr. M. A. Cleaves, New York City.

Title to be announced, Dr. Fred. H. Morse, Melrose, Mass.

Closing Arterial Wounds by Suture.

Dr. Heidenhain, in the Centralbl. fur Chir., No. 49, 1895, cites two previously recorded cases, involving in one instance the common femoral, in the other the common iliac. He also reports a case of his own, in which during the removal of some cancerous glands from under the armpit, and after necessary resection of a portion of the axillary vein, a wound about an inch and a half in length was accidentally made in the main artery. The bleeding was arrested by digital compression and the edges of the arterial wound were brought together by a continuous suture of catgut. The bleeding was thus completely arrested. The lumen of the vessel was not apparently diminished. The sutures held firmly in spite of strong arterial pulsation. The patient made a good recovery, and when last seen, seven months after the operation, was quite free from relapse. The axillary artery could be felt pulsating along the whole extent of the armpit.—The Medical Record.

I think you might dispense with half your doctors if you would only consult Doctor Sun more, and be more under the treatment of these great hydropathic doctors, the clouds.—Beecher.

Extracts and Abstracts.

How to Prevent Anæsthetic Vomiting.*

By Thos. W. Musgrove, M. D., Fairhaven, Washington.

Of all creatures known to science man is the most given to vomiting. Every organ of his body is connected by alarm nerves with the vomit center. A sudden injury to any important or vital organ will produce vomiting. In many persons a disagreeable thought, a disgusting sight, a fright, a chill, or anything that impresses the vomit-center that there is something obnoxious in the system, produces a contraction of the diaphragm, reversed peristaltic action of the stomach, with ejection of its contents; or, if the stomach be empty an attempt to vomit the stomach itself. This safeguard of life is so finely adjusted—set with a hair trigger, as it were—that vomiting frequently becomes one of the most annoying and even dangerous complications of disease in many patients. Vomiting may be a simple regurgitation, or it may be of so severe a character as to resemble the throes of parturition.

The vomiting of pregnancy, the nausea of intestinal disorders of children, the uncontrollable vomiting of meningitis, of intestinal obstruction, are all sufficiently distressing to the patient and troublesome to the physician, to try the courage and skill of the best of us. But none are more annoying and obstinate than the vomiting produced by anæsthesia.

Nearly all patients who are deeply narcotized by any of the popular anæsthetics suffer more or less from nausea and vomiting. I believe fully ninety per cent of all persons who are kept under an anæsthetic more than half an hour are made sick. If ether is used, about 60 per cent vomit. If chloroform, about 40 per cent. If nitrous oxide, not more than 10 per cent, but it is very seldom that anyone is kept under gas half an hour.

In abdominal surgery, the vomiting during and after the operation is often exceedingly troublesome, and sometimes dangerous.

These statements are so well known to the profession that I need not elaborate or quote authorities to prove them. We all know them unpleasantly well. The question is how to prevent anæsthetic vomiting. As both the etiology and process of vomiting is very complex it is plain that there is no simple method of preventing it. The only rational method is to keep in mind and etiology and physiological process of vomiting, and put the patient in a

*Read before the Washington State Medical Society, May 19, 1896.

condition as far from that which produces it as possible. Consequently, only by attending to all the details of preparing a patient for an operation can vomiting be reduced to a minimum.

1st. The preparation of the patient.

2nd The selection of the proper anæsthetic for each patient.

3rd. The method of giving the anæsthetic.

4th. After-treatment.

Every patient who has to undergo a severe operation, especially an operation of election, should be especially prepared, both mentally and physically, to withstand shock and pain.

Many surgeons have given years of patient and intelligent investigation to the best methods of preparing patients for operations under anæsthetics, yet we have not a system that is fully satisfactory and generally adopted by all surgeons. All agree on a few things. No surgeon will give an anæsthetic to a patient except in a grave emergency, soon after eating solid food. Six to eight hours is considered sufficient time after a meal. Twelve or more hours is apt to leave the patient hungry and less able to stand an operation. My own method is to empty the alimentary canal thoroughly the day before the operation, and give liquid food only the night before and malted milk or soup four hours before the operation. An especial effort should be made to have the stomach and bowels free from gas.

Few patients should have morphia in any form before giving an anæsthetic. Morphia often aggravates the nausea. Whiskey does the same thing and should not be given before the operation. In fact, all depressing anti-pyretic drugs should be avoided. Keep the patient's mind as cheerful as possible, and the strength as great as possible. Keep the patient warm. The rapid evaporation of all anæsthetic cools both the patient and the surrounding atmosphere, and many a lung complication has been produced by the great reduction of temperature rather than by any other factor in the operation.

A very warm room—about 80 degrees F.—warm, dry flannel clothing, kept in close contact with the patient's skin, and as small a field for the operation as possible exposed to the air, will prevent shock and chill and thereby counteract the tendency to vomit after the operation.

2nd. Selection of anæsthetic.

After using pure ether—as I was taught at Harvard by the renowned Bigelow—for ten years, and then having associated with surgeons who were educated in Edinburgh, under the influence of the celebrated Sir James Y. Simpson, I used chloroform mostly for five years, but the surgeons from whom I learned the use of chloroform having a very sad death from it in the hospital, the board of directors passed a resolution prohibiting the use of chloroform in that institution, except in especial cases. I began the use of the A. C. E. mixture about ten years ago, and have used it almost entirely ever since with the utmost satisfaction.

The A. C. E. mixture is composed of one part of pure 95 per cent alcohol, two parts of pure chloroform, and three parts of pure ether, by volume. This mixture keeps well in the dark. It should be given on a hollow sponge, covered with a leather case, with an opening in the top that can be opened or closed, as the surgeon giving the anæsthetic deems necessary.

3rd. Method of giving an anæsthetic.

Begin with a half a drachm of the A. C. E. mixture on the sponge and let the patient inhale it slowly. The more through the mouth at first the better. Take at least ten minutes to bring the patient fully under its influence. During the operation give just enough of the anæsthetic to keep the patient quiet. Many patients are so saturated with the vapor that it is no wonder they vomit and have no rest for many hours after the operation.

4th. After-treatment.

If the method just outlined be skillfully carried out, there will be but few cases requiring special after-treatment.

Vomiting will be reduced to a minimum. But in the cases where shock and the anæsthetic have produced nausea and vomiting, there is nothing better than one drop doses of wine of ipecac on the tongue every half hour for two or three hours. If there be much pain a hypodermic of morphia will often relieve the patient, but in abdominal operations the less morphia used the better as a rule.

Ice has not been of much use in my experience. It does for a little while, but in one or two hours the tongue glazes and the stomach becomes uncomfortable. A mustard plaster on the back of the neck often relieves the patient. The skin should not be blistered. Over medication is sometimes the cause of vomiting. The hypodermic injection of digitalis, ether, strychnia and whiskey is often so heroically employed that the brain centers are driven to the utmost exertion of their power to expel so much poison from the system by vomiting.

The tendency of the surgeon is to conclude that so long as his treatment does not kill the patient, that nothing he does causes any harm. Unfortunately, the human mind is so constituted that any man is liable to fall into error regarding his most cherished work, consequently we fall into habits of dosing that are often unnecessary and sometimes injurious. The simplest medication is surely the most scientific, and the complex is so difficult to fully understand that no one can be absolutely sure

that he knows the post hoc from the propter hoc.

For the sake of brevity, I have not made quotations or referred to authorities, but simply put the conclusions of my studies and practice of twenty-five years in as small a space as possible. I have never had a death in my practice, nor under my care from an anæsthetic. I have given anæsthetics in many cases, for all kinds of operations, and never had but one fright in all of them. A young woman came to me to have some teeth extracted. She disliked ether so much that I gave her chloroform, and if I had not been on the alert, she would have died in the chair. By quick work I lowered her head and pulled out her tongue, and she began to breathe again and soon recovered. So I would say never give chloroform to a patient in a dentist's chair, with his clothes on, and no preparation.—Medical Sentinel.

NEW HOSPITAL OF THE A. T. & S. F. HOSPITAL ASSOCIATION AT TOPEKA, KAN.

The New Santa Fe Hospital at Topeka.

The engraving presented herewith shows the exterior of the new hospital erected at Topeka, Kan., by the hospital department of the Atchison, Topeka & Santa Fe Railroad. This is the fifth hospital of the system. The other four are located at Ft. Madison, Ia., Ottawa, Kan., La Junta, Colo., and Las Vegas, New Mexico.

The new building was erected by the funds of the A., T. & St. F. Hospital Association, completed and turned over to the board of trustees on May 21 of the current year, and by them immediately turned over to the chief surgeon, Dr. Geo. W. Hogeboom, for equipment and opening. It was partially equipped and opened on the 22d of June, in immediate charge of the superintendent of hospitals for the association, Dr. J. R. Fay.

Its construction is sandstone from Flagstaff, Ariz., for the first story, and for the stories above pressed brick. Its capacity is from 75 to 100 patients. There are three general wards with a capacity of 18 beds each, three small wards of 4 to 6 beds, and the balance single rooms. This capacity can be safely increased one-third if necessary to do so. Its interior construction is of the most modern type. Its heating and ventilating is of the Sturtevant system, by fans propelled by electricity, by which the air in the entire building can be changed in 10 or 12 minutes, without the stirring of a feather held in midair in any room; and in each ward or room occupied by patients the heat is controlled by the Johnson automatic heat control, by which the temperature can be maintained at any desired degree. Since its opening it has administered to a daily average of from 20 to 25 patients, which is constantly increasing. Its patronage from out-

side patients has been at the rate of $150 per month, which is also increasing. It is in universal favor with the profession, especially for its capacious and well-equipped operating room.

In reference to the utility of the Railway Employes' Association, the chief surgeon says that this association was organized in 1884 and since that time to date the evidence has been complete and conclusive of the good effects and results of such association, both to the employe and the railway company; and he earnestly urges all railway companies to favor such organizations.

Fracture of the Os Calcis, with Report of a Case of Comminuted Fracture with an Unique Method of Treatment.*

Dr. Henry M. Joy of Grand Rapids, Mich., reports the following interesting and instructive case in a recent issue of the Annals of Surgery:

Fracture of the os calcis of any variety, notwithstanding the peculiar liability of this bone to injury from its location, may, I think, be classed among the rare fractures with which the general surgeon has to deal, and there exists, I think, a corresponding scarcity of literature upon the subject.

The os calcis may be fractured either by muscular action, in which case the lesion is immediately below the insertion of the tendo Achillis and is accompanied with marked upward displacement of the fragment due to mucular contraction, or the injury may be caused by direct violence, as from a fall upon the foot. Fractures due to a fall are usually comminuted, and may be diagnosed by the flattening and broadening of the sole and heel, which is observed when comparison is made between the injured and the sound foot.†

Crepitus may or may not be present, but if present is most readily obtained by rotating the foot and at the same time holding the heel, or by holding the heel and flexing the ankle. The treatment of these injuries will be referred to in connection with the following case:

Mr. B., aged twenty-one years, while suffering from an attack of delirium tremens, jumped from a second story window in his stocking feet to the frozen ground,—a distance of about twenty feet,—he landed squarely on his feet, then fell forward onto his face.

Notwithstanding the injury sustained he succeeded in rising and ran some thirty or forty yards before being captured and returned to the hospital.

Examination showed the presence of a transverse fracture immediately below the insertion of the tendo Achillis, due probably to muscular action in the attempt to prevent falling forward after striking the ground.

Evidence of flattening and broadening of the sole of the injured heel, when compared with the sound side, led me to suspect a fracture of the subastragaloid portion of the bone, though no crepitus could be obtained.

The action of the tendon was so marked that the upper fragment was separated about two inches from the lower portion of the bone, with the skin tightly stretched over it, and attempts at reduction either by manipulation or position with flexion of the leg and over-extension of the foot being unsuccessful, an operation was deemed advisable. An incision was made in the median line of the plantar surface of the heel extending over the heel and about three inches along the course of the tendo Achillis, which was exposed by the incision. After the incision was completed, a large quantity of effused blood escaped from the wound, when it was seen that the subastragaloid portion of the bone was crushed into three fragments of different sizes.

The extensive comminution rendered the use of either nails or the ordinary method of wiring impossible, and a somewhat unique method of treatment was adopted. The tendon was first severed by an oblique incision, beginning at the outer side one inch above its insertion into the bone and ending on the inner side about two inches above the starting point. It was then easy to slip the upper fragment with its attached portion of tendon down into place.

A medium-sized silver wire was then passed through the tendo Achillis at its insertion, then through the tissues immediately surrounding the various fragments, returning to the point of insertion, thus fixing the fragments at the periphery of each, so that when the suture was completed the fragments were inclosed in a loop which, when drawn taut, brought the parts into perfect apposition. A few turns were then taken in the wire and the ends cut off. The severed tendon was next united with fine silk, the wound closed with silkworm-gut and dressed, and a plaster-of-Paris cast applied with the foot in an over-extended position to secure as much relaxation of the tendon as possible, and thus avoid any tendency to separation of the fragments or of the ends of the divided tendon from tension.

The wound was first dressed and stitches removed on the eleventh day, when primary union of the cut surface was found complete. second cast was applied at this time with the foot still over-extended.

Fearing lest too firm adhesion might form between the tendon and the surrounding tissues the cast was removed at the end of two weeks, making in all about four weeks that the

* Read before the Grand Rapids Academy of Medicine.
† American Text-Book of Surgery.

foot had been immobilized. Much to my gratification, there had apparently been no inflammatory action whatever, as the function of the tendon was as perfect as in the sound foot, with no evidence of any formation of adhesions.

The treatment advocated for these fractures varies according to the location of the injury. In cases where the fracture is subastragaloid the use of splints will usually be unnecessary. The leg should be placed in a comfortable position and cold lotions applied until swelling has subsided, after which an immovable dressing should be applied and the patient allowed to get about on crutches (Agnew).

For fractures of the posterior portion of the bone (immediately below the insertion of the tendon), the application of a side or anterior splint with the foot over-extended or the use of Monro's modification of Thillaye's apparatus—a device for securing this position, is sometimes used. When the injury is of this nature, I do not believe it possible if there be much muscular contraction to secure enough relaxation of the tendon by position alone to obtain sufficiently perfect coaptation of the fragments, and though there is danger of death of the fragment when tenotomy is practiced, the upper portion of the os calcis being largely dependent for its vascular supply upon the tendon, I believe the dangers of a useless foot are less when an open, oblique tenotomy is made and perfect coaptation of the fragments obtained followed by immediate suture of the tendon than when an attempt is made to keep the parts in position by the use of a splint or any apparatus which has as yet been devised.

(22) Massage in the Treatment of Joint Fractures.

Pello (Archiv. di Ortoped, An. 13, fasc. 3, 1896), draws attention to the value of early massage and passive movement in the case of intra-articular fractures. He believes that the usual method of treatment by prolonged fixation delays recovery, and only too often leads to ankylosis. He then reports three cases where massage was practiced at once, and where the only fixing apparatus was a starched bandage freely cut away so as to allow of the massage. The first case was that of a boy, aged 6, with intra-articular fracture of the trochlear process of the right humerus. Light massage was practiced at once, and gave much relief to the pain; the joint was put up in a starched bandage. The next day a good part of the bandage was cut off, and twenty minutes' massage practiced. On the fifth day slight passive movement of the joint was commenced. On the tenth day the bandage was discarded; at the end of a month the elbow was as free in its movements as before the fracture. The second case was that of a man, aged 38, with Colle's fracture, treated in a similar way and completely cured, with free movement and no deformity, on the fifteenth day. The third case was that of a man, aged 40, who fractured his tibia and patella. The tibial fracture was treated in the usual way; the patellar fracture was unrecognized at the time, and after seventy days' treatment, when the patient was first seen by the author, although the tibial fracture was healed, the patient's limb was useless, as the patellar fragments were distant 2 centimeters, and only worked by weak fibrous union. Massage was practiced, and after fifteen days the patient could walk with crutches, the œdema disappeared, and flexion of the knee (previously rigid) could be obtained. At the end of a month the patient could walk well with a simple stick; in two months he could walk upstairs, so that no one would suspect any injury to the limb.—British Medical Journal.

Changes in the Spinal Cord Following Amputation.

Dr. Alfred W. Campbell detailed the changes found in three cases,—one an amputation below the knee and two amputations through the upper arm. For purposes of comparison sections of a spinal cord from a case in which the entire brachial plexus had been injured in early life were shown. In all cases marked changes in the spinal cord were found in those segments which receive the sensory nerves from the skin and give off the motor nerves to the muscles removed. These changes were hemiatrophy, with universal reduction in size of gray and white matter, without definite sclerosis of special tracts, and a numerical deficiency of the nerve cells in the cornua, but especially in the postero-lateral group of the anterior cornu, all on that side corresponding to the amputation. In the case where the leg had been amputated there was a reduction in the number of the nerve cells in Clarke's column, in the lower dorsal and upper lumbar segments. The peripheral nerves above the site of operation revealed marked atrophic alterations and a filling up of the intervening spaces between bundles by large quantities of fat. The ganglia on the posterior roots presented atrophy of some nerve cells. In the brachial plexus case the hemiatrophy was not so marked and the posterior cornua were symmetrical, a condition which might be due to the skin being left intact. Reference was made to Sherrington, Head, and Thorburn's work on "spinal localization," and the wonderful accuracy of the results of these observers as confirmed by these cases was commented upon.—Universal Medical Journal.

Miscellany.

Management of Cases Immediately Following Operations.

Sir Thornley Stoper (British Medical Journal) writes as follows: "If I may reduce to formulæ the matters I have referred to, I would put them thus: (1) That the tendency to prolong operations must be carefully guarded against, as it is a grave cause of danger. (2) That in the treatment of shock and vomiting following operation we get no help from the stomach, and must rely on the rectum as its substitute. (3) That heat, alcohol and opiates are our best remedies; and that the latter are well borne, and must be intelligently used to their full effect. (4) That drugs of the class ordinarily used to check vomiting are of little or no use in the cases under consideration. (5) That ice does not relieve thirst, and does harm by introducing water into the stomach and so provoking vomiting."—The Medical Record

The Management of Railway Hospitals.

It may not be uninteresting to the readers of the Fortnightly to give a cursory idea of the management of hospital departments upon railways as at present constituted. At the head of the department presides its chief executive, known as the chief surgeon, medical director or general surgeon. The chief surgeon has complete control and directs the management and disposition of cases, causes reports to be made, has charge of all hospitals and appoints all surgeons, renders personal injury reports to claim and legal departments, and causes to be kept a current history of every case treated. The chief surgeon directs the expenditure of bills incurred in conducting the department, vouching all accounts, selects experts for the company in damage suits and adjusts all disputed points pertaining to the department. The general manager is the only officer of the road to whom the chief surgeon reports and they alone are authorized to incur expense. The chief executive of the hospital department is held responsible for the proper performance of all its work and general efficiency, and therefore seeks to improve his department in every detail and being thoroughly cognizant of all that pertains to his department becomes an important factor in railway management. Local surgeons are appointed at every town of any importance and at large division points, where many employes are engaged, two surgeons are stationed. Most roads average one local surgeon for every twenty-five miles represented.

The railways employ more members of the medical profession than any other industry; some of our large systems have as many as 325 surgeons in their employ. Local surgeons are supplied with printed instructions, covering all accidents that might occur, and in the event of an accident no misunderstanding nor confusion arises. All superintendents, train masters, conductors, engineers, brakemen, agents, road masters, section foremen and others have essentially the same printed instructions how to proceed in case an accident occurs and where to find the nearest local surgeon. All time-cards in force contain these directions and in addition thereto is printed the names and locations of all company surgeons of that particular division upon which they operate. When an accident occurs upon some portion of the road the chief surgeon or assistant chief surgeon is immediately notified by wire by the local surgeon and also by the superintendent, conductor or agent, detailing where, how and when it occurred, and the extent of injuries; the local surgeon is then directed regarding the disposition of the case and the advisability of transporting the same. Stretchers are placed at stations where local surgeons are stationed, and upon all baggage and wrecking cars, hence cases can be shipped with celerity. Notification is sent when a case is to be shipped and hospital ambulances meet the train. Should a passenger train be wrecked not only all local surgeons in the immediate vicinity are called, but invariably relief surgeons and surgical supplies are sent from hospitals. Instructions are likewise printed for the guidance of employes in case of sickness. Everything is explicitly stated regarding proper certificates of admission, character of cases admitted and requests for medicines and treatment through the mails. Records of all personal injury cases are filed in the chief surgeon's office. Thus, upon the Missouri Pacific the chief surgeon has over 30,000 reports of personal injuries on record for reference. At the hospital, a personal bedside history is taken daily by the attending surgeon. We have, therefore, not only a record of the injury, but a daily history from the time of the injury until settlement is made. These departments never lack patronage. The Missouri Pacific hospital department, including two hospitals and five emergency stations, treats nearly 30,000 employes annually, and it is computed that the various hospital departments of the United States treat from 165,000 to 185,000 annually.

A hospital department as at present constituted consists of the following medical officers: Chief surgeon, house surgeons, consulting surgeons and specialists, oculists, aurists, throat and lung specialists, dermatologist, neurologist, bacteriologist and pathologist and consulting electro-therapeutist.

The rapidity of growth of these departments

advocate early, immediate amputation, regardless of the presence or the absence of shock, and even regardless of surrounding circumstances; while another will advocate postponement until reaction has been well established.

It cannot well be that the experiences of individual surgeons have been so diametrically opposite concerning the same condition. When we take into account the fact that shock is but one of the elements of danger it is not surprising that our results should have differed in dealing with similar injuries. We rarely, if ever, even hear of the cause of the shock being taken into consideration, and yet we all know that shock from hemorrhage is a greater barrier to an immediate operation than shock of

FIG. I. APPEARANCE OF INNER ASPECT OF LEFT FOOT AND THE AMPUTATION STUMP. FEMUR DISPLACED UPWARDS FOUR INCHES.

a purely nervous origin. As a matter of fact, the administration of an anæsthetic, which is so dangerous a measure in shock from hemorrhage, may prove beneficial in purely nervous shock.

Shock is not the only condition which should determine when we should amputate and if we attempt to formulate a rule relating only to shock, the exceptions will, I fear, be more frequently operative than the rule itself. In all the arguments, pro and con, there must be some truth, and in my humble opinion the truth is distributed all the way from one extreme to the other. A substance that may serve as food for one person may poison another, and likewise the immediate operation may save one patient, while an operation deferred several hours, or even days, may be the only hope of another. The patient in his entirety should be the object of our consideration and not merely the single manifestation—shock.

While the proper relation of operative procedures to shock is of most vital importance, since it so directly affects the life of the individual, we must not lose sight of the fact that the individual's life may prove to be a burden to himself and his family without the assistance of one or more members which would be sacrificed by a premature operation; limbs which might perchance be restored to life and utility if placed under favorable circumstances. That limbs, and especially fingers, are, even in these days, frequently unnecessarily sacrificed, cannot be successfully refuted. One need not look far to find surgeons who are performing amputations on the same principles that were taught decades ago, when the effects of the ever-present suppuration made conservatism and attempts at restoration of function worse than useless—dangerous. The old argument that delay meant sepsis and that sepsis left death in its wake, should surely not be given much weight in these days of enlightenment. Antiseptics and drainage have eliminated all danger of serious results from the reasonable postponement of an amputation. The surgeon, who practices on the basis of modern bacteriological knowledge, does not fear the slight toxæmia which results in all cases when dead or dying tissue is left in contact with the living.

There can be no doubt, it seems to me, that an amputation is only indicated in traumatic surgery when the soft parts are so crushed and disorganized that repair of the injury is absolutely impossible, or if it should take place the injured member would be useless. I believe the last condition is a most pertinent one, since it is quite as serious a mistake to err on the side of saving useless numbers, as it is to sacrifice one which might have been of some use. If we accept this proposition we are then brought face to face with the conditions of the particular case before us, which must, at least in so far as the local conditions are concerned, be considered as a rule unto itself. While it is true that in many cases we can decide at once as to the necessity for amputation, yet in

a large number of cases it is absolutely impossible to formulate a positive opinion until at least 24 and possible 48 or even more hours have elapsed. I desire to emphasize the fact that, while the general condition of a patient is manifested by signs and symptoms which admit of reasonably accurate interpretation, the indications as to the extent of the local injury are so uncertain and unreliable that a limb which presents all the clinical evidences of death may in a few hours glow with the warmth and color of life. As an illustration of this fact I will recite the records of a case in which the force of circumstances compelled me to defer amputation against my best judgment.

J. J. was injured near Chicago on February 12, 1891. While climbing up the side of a box car on a new piece of track, a tree knocked him between the cars and two pairs of trucks of a flat car loaded with stone passed over him. He was brought to the city, a distance of six miles, and was taken to the surgeon who was at that time my associate.

As the result of his years of experience and a careful examination he deemed that amputation of the left foot, over which a car wheel had passed, was absolutely necessary and that the good circulation in the right foot warranted some conservative operation upon the right leg. The patient refused operation absolutely and was turned over to me by the officials of the company. Upon examination I found several scalp wounds, a fracture of the inferior maxilla and of the left clavicle and a dislocation of the right hip, with fracture of the retaining portion of the acetabulum. The right leg had been run over by a wheel, and in addition to very extensive lacerations of the muscles, the tibia and fibula were fractured in two places about three inches apart, and the fragments were detached. The circulation in both the anterior and posterior tibial arteries was, however, very good, and the nerve supply of the part was nearly intact. The left foot was crushed by the passage of a wheel over the instep with the flange near the ankle joint. The foot was blanched, cold and senseless and it was impossible to detect any circulation in the part below the injury; in fact, the foot was to all appearances dead. That both of the plantar vessels had been divided seemed probable from the profuse arterial hemorrhage which occurred through each of the lateral wounds. The tarsal bones were all ground up.

The conditions were explained to the patient and while he then thought an operation necessary he refused to permit the same until his father should arrive on the next day.

The parts were thoroughly cleaned with soap and brush and the wounds irrigated with 1-3,000 bichloride solution. Having experienced some success with moist heat in the treatment of contused and lacerated tissues, I thought it a good opportunity to observe the effects upon a whole limb. The injured parts were surrounded with very large compresses of sterilized gauze and covered with rubber tissue. The limbs were elevated and artificial heat applied to the left one by means of a hot-water bottle. Through apertures in the dressing 4 to 6 ounces of a saturated solution of boric acid crystals was poured every one to two hours. On the following day (some twenty hours after the accident), the patient and his father consented to the removal of the left foot. The right leg was first operated upon. The fragments of bone removed and remaining parts wired together, causing three inches shortening. With the expectation of amputating the left foot, we exerted ourselves to approximate the tissues of the right limb anatomically as much as possible, although at that time we had some doubt concerning the ultimate outcome. We wished to give

FIG. 2. APPEARANCE OF THE OUTER ASPECT OF SHORTENED FOOT, SHOWING MANY SCARS AND THE ABSENCE OF THE INSTEP.

him every possible chance to have one foot left. The operation completed, we prepared to amputate the left foot. On removing the steaming dressing, we found to our joyful surprise that the foot was of a nice pinkish hue, although still anæsthetic. The crushed bones were removed and the shortened foot was again placed in its warm extemporized bath. On the second day there appeared evidences of extensive necrosis in the right leg, which extended on the following day. On the fourth day the leg was disarticulated at the knee joint through what were apparently safe, though contused soft tissues.

As the corresponding hip joint was totally

FIG. 3. AMPUTATION THROUGH CONTUSED TISSUES. CHARACTERISTIC APPEARANCE AFTER SLOUGHING.

disorganized we selected the disarticulation, which is not the best amputation in those parts, unless the patient prefers to wear a peg leg.

The left foot progressed favorably and at a subsequent time when one of the metatarsal bones was removed for necrosis, no evidence of the plantar arteries could be found in the distal part of the foot, indicating that they had been destroyed. The flaps of the knee stump became necrotic and sloughed considerably. The parts were finally covered by Thiersch's skin grafts, as the patient refused reamputation. Surely the unexpected happened in this case; the limb which we had expected to save was lost and the one which several of us had considered dead was restored to life and has since served the rest of the body with but little annoyance.

Figure 1 shows the inner side of the foot and the amputation stump. Figure 2 shows the scar on the outer side of the left foot, and the appearance of the shortened foot. The foot which normally required a number nine shoe, now requires only a number five and a half. There is nearly three inches shortening in the length of the foot.

The vessels which supplied the abundant circulation of the right foot had evidently been injured, as a result of which the circulation was interrupted a few days later, while the foot whose supply vessels had been divided was revivified and sustained by the primary dilitation and subsequent contraction of the capillaries which, I hold, was rendered possible only by the application of the hot boric acid solution. Being compelled to postpone operation caused us to save what proved to be that unfortunate man's only remaining foot.

As to the shock in this case, I will state that notwithstanding his numerous fractures, both simple and compound, and the loss of much blood the man was not profoundly shocked and could have been safely operated upon at any time after I saw him.

This case also illustrates the fact that it is not always possible to tell the precise point at which an amputation should be made until some hours, or even days, have passed. If there is any rule or principle which is universally applicable in all amputations, I believe it is that we should save all that we possibly can, providing the same can be rendered useful. In order that we may secure a good serviceable stump, it is desirable to operate through tissues of undoubted vitality (in known quantities), and yet it would be an unjustifiable procedure to always amputate above the lines of contusion, because tissues sometimes manifest a remarkable recuperative property. Therefore, I am of the opinion that the local conditions should be given nearly as much, if indeed not equal prominence with the general condition in our decision of "When to Amputate." When in doubt, the wise surgeon, like the wise navigator, proceeds cautiously, and only when he is sure that he is right does he push boldly ahead. When applied to amputations, this principle means, to my mind, that when the line of destruction is

positive and known, with general conditions permitting, we should amputate, but when the vitality or usefulness of the parts or the condition of the local tissues is questionable, even with favorable general conditions, we should postpone our mutilating operation until we are able to arrive at a safe conclusion. I make this as a general proposition to which we will all find some exceptions. The environments of the patient may be such as to positively preclude any efforts at properly treating lacerated tissues, while incised tissues might heal promptly, or the alternative of immediate operation or loss of the case may be forced upon us, in which case the degree of our uncertainty must be weighed with care and the wishes of the patient taken into consideration. In still other cases it may seem advisable to include doubtful tissues in amputation flaps, in the hope that at least a part may survive and thus provide a stump which an incision through safe tissues would remove altogether.

I am pleased to say that in the last few years I have had no difficulty in obtaining permission for postponement with efforts at rehabilitation; in fact, the laity are so well informed as to the possibilities of modern surgery, that in my experience they often request that we try and save all we can.

The case of M. J., which occurred in the practice of a friend of mine, to whom I am indebted for the history and photograph, as well as the privilege of reporting it, illustrates the fact that it is impossible to decide just what tissues to trust. The arm was badly crushed and amputation imperative. The operator decided to try and save a stump, and in order to do so was compelled to utilize contused muscle and skin, some of which sloughed, but the parts were kept aseptic and recovery was comparatively but little delayed. Figure 3 shows the typical appearance of the sloughing stump after amputation, followed by necrosis. This case illustrates three points, viz.: First. Operations through doubtful tissues are uncertain and liable to be followed by extensive sloughing, which may in turn require re-amputation. Second. Circumstances may render it advisable to operate even through seriously damaged tissues. Third. Even sloughing tissues, if properly treated, do not necessarily endanger the vitality of the adjacent sound tissue nor the life of the individual.

These cases are but two of many which illustrate some of the phases of this question, and while I do not wish to tire you by reports of numerous cases, I will ask your indulgence to the extent of hearing that of J. W., who was injured about three years ago while standing on the foot-board of an engine, by having a drawbar of a passenger coach driven through his thigh. He was over six feet tall, young, and a specimen of perfect manhood. All the tissues on the inner and posterior aspects of the thigh were extensively lacerated and destroyed for a distance of from eight to fourteen inches. The wound on the inner side of the thigh was 16 inches long. All the inner and both ham-

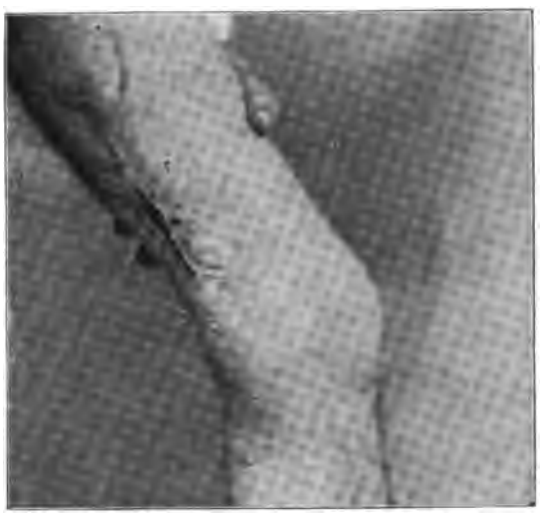

FIG. 4. INNER SIDE OF THIGH SHOWING LOCATION OF CONTACT WOUND AND THE APPEARANCE OF SCAR EIGHT MONTHS AFTER INJURY. SCAR ROLLED FORWARD BY PATIENT'S HAND.

string groups of muscles were pulpified and disorganized, and the sciatic nerve was wanting for over six inches. The inner and posterior aspects of the femur were entirely free and uncovered. The skin of the whole thigh was loosened so that my hand could be passed beneath it at will, and was perforated where the point of the drawbar impinged, and at several other points on the outer side of the limb, which are shown in the illustrations. There was but little active hemorrhage, but the shock was the most profound I have ever observed which was not followed by death. It was so great, in fact, that even the femoral pulsation could not be determined. The destruction of the great sciatic nerve probably accounts for the great amount of shock, which was of the

nervous form. This was one of the most awful appearing wounds I have ever seen. Surely this case was one for immediate amputation, so far as the limb was concerned, and one for delay when the critical condition of the patient was considered. It was with difficulty that I dissuaded the hospital surgeons from amputating at once. Amputation, in my opinion, meant death. Nothing was to be lost by postponement and possibly we could save his life and perchance his limb also. The patient grasped the proposition as a drowning man might a straw. Notwithstanding his shock, a small amount of ether was given, and, as is

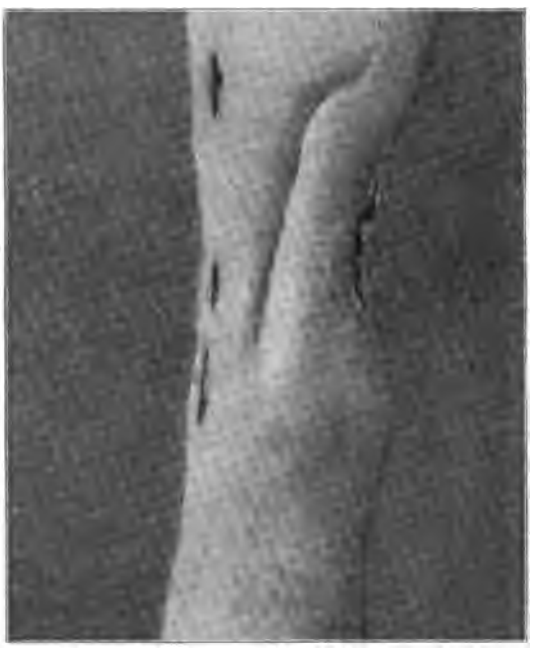

FIG. 5. SHOWING POSTERIOR VIEW WITH THE ENTRANCE AND EXIT SCARS AND THREE SMALLER ONES.

usual in such cases, the patient's condition was greatly improved thereby. The vessels were picked up and ligated. A few shreds of the muscles were tacked across the chasm, which the removal of the large amount of muscular tissue had left, so as to protect the popliteal artery, which was intact. As the parts would surely slough, no effort was made to restore the continuity of the nerve. The whole limb was surrounded by gauze compresses saturated with hot boric acid solution, which was to be replenished frequently so as to provide continuous immersion and irrigation with a mild antiseptic and potent inhibitory agent.

Our days and weeks of toil with the open opposition of internes and nurses was rewarded by saving that leg. A failure to keep up the application allowed a marked degree of toxæmia to occur on the third day, but this was readily controlled by the carrying out of the details of the treatment. As fast as necrosis occurred the sloughs were removed.

The large wound area was partially closed in with Thiersch's grafts, but the amount of scar tissue was so great that a small area refused to close for some months. The patient recovered with an anæsthetic and paralyzed foot, but is there any man who will deny the wisdom of our course? Not only his life, but his limb, too, was saved. What more could we ask? If there is a doubter present I will state, for his benefit, that the sensation and muscular action have been partially restored and that the limb is so useful that he walks with scarcely a noticeable halt in his gait and has for two years been performing the active duties of a night switchman. Cuts 4 and 5 illustrate the appearance of the parts about eight months after the injury, before the wound had entirely healed. While advocating conservative measures in many cases of contused tissues, I do not wish to be understood as recommending their universal employment. We should use conservative measures when there is some probability of saving something useful for our patient, or as a protective measure during the hours when delay for any reason is necessary, and only when we are able to carry them out in the fullest detail.

While the conditions we have to deal with are complex and of the most serious importance, the treatment which I have indicated is old, simple and easy of employment, especially with reasonably intelligent assistants.

The great dangers in delaying operative measures are necrosis, infection and sepsis, and therefore our therapy should be directed to limiting or obviating these conditions. It may be safely said that practically all contused and lacerated wounds are infected, and as damaged tissues are especially susceptible to the effects of pyogenic and putrefactive bacteria, it should be our endeavor, first, to prevent bacterial growth; second, to prevent absorption of their products by removal thereof; third, to favor the circulation of the part, and thus increase the combative power of the tissues and favor repair, and fourth, to counteract the ef-

fects of the absorbed ptomaines upon the general system.

The rational treatment of an infected wound is based upon disinfection and drainage. The more perfect and continuous we can keep these two elements in operation, the more limited the damage and the less the sepsis. Continuous drainage can be effected by submersion where practicable, or by constant irrigation through a tube or, if necessary, by the addition of the solution to dressings, surrounded by impervious tissue, at short intervals. Circumstances will render each method useful, and if conscientiously maintained the results will be practically the same. The effect of the constant moisture upon contused tissues is so well known that it is unnecessary to dwell upon it; suffice it to say that the primary relaxation of the circulation with the subsequent contraction of the small capillaries which promotes an approach to normal circulation in the damaged tissues, is a most salutary effect. With normal circulation, both arterial and venous, there is little chance for necrosis, and with necrosis limited we should be able to successfully combat the local conditions. The most important indications in favoring the circulation of a part, are rest, relief of tension and elevation. The first limits the amount of arterial blood, while the others favor the return circulation. We should always look out for the free return of the venous blood, because venous and not arterial stasis is the determining element of necrosis in infected wounds.

Wherever there is extravasation of blood into the tissues, and those tissues are of questionable vitality, the imperative indication is to make free incisions, thus promoting circulation by relieving pressure, and enabling us to apply agents which will inhibit bacterial growth in the damaged tissues. Having placed our injured tissues under the most favorable mechanical conditions, we should next select our antiseptic agent. Those who favor the submersion plan of treatment argue that an antiseptic is practically unnecessary, but if there is anything in the beneficial effects of a constantly applied innocuous antiseptic, surely contused tissues are ideal ones for its employment. The substances which have yielded the best results have been boric acid crystals in a saturated solution, and acetate of aluminum solution in the strength of one-half of one per cent dissolved in cold water. The uncertainty of the solubility of the acetate of aluminum has caused me to rely upon boric acid crystals, which are readily soluble. Boric acid solutions penetrate tissues very readily, and experiments have demonstrated its inhibitory action to a considerable depth into the tissues. The limb, and especially the wet dressing, should be kept at a reasonably warm temperature.

In conclusion I beg to summarize the treatment of contused tissues in wounds, as follows:

1. Relief of tension by incisions.

2. Prevention of venous stasis by elevation of the limb.

3. Prevention of arterial engorgment by quieting the nervous and circulatory systems.

4. Prevention of bacterial growth by the early removal of all necrotic tissue and the employment of some potent but innocuous inhibitory agent.

5. The mechanical removal of the bacteria and the prevention of the absorption of their ptomaines by free continuous drainage maintained by some form of constant irrigation or submersion.

DISCUSSION OF DR. BOUFFLEUR'S PAPER.

Dr. P. Daugherty: We had a very animated discussion in Chicago, one year ago, on this subject, over a paper read by a gentleman from Pittsburg, who is not here to-day. Dr. Murdoch's position, at that time, was severely criticised by a number of men present. I think at the time that some of the members failed to understand the doctor. Dr. Bouffleur to-day has taken very much the same position Dr. Murdoch did at that time, being probably a little more conservative. Dr. Bouffleur maintains that every case must be a law unto itself; that we can formulate no rules to follow in all cases, but that every case must be examined, and the surgeon must determine from what he sees in that case, what is the best course to pursue. Old David Crockett's rule was: "Be sure that you are right and then go ahead." Dr. Bouffleur's rule is that when you believe you are right, then go ahead. He makes one point that I admire, viz., he is not afraid to operate in damaged tissues, provided by operating on them he can save a valuable stump or save valuable portions of the limb. I have never been afraid of damaged tissue, where I could conserve anything by it, because we have a means of checking or prevent-

ing sepsis. Another point the doctor makes is that he never amputates so long as there is a possibility of saving the limb. Probably I have been a little too conservative in this respect. I have saved some limbs that appeared to be utterly worthless, but were of practical utility afterward. If we amputate a limb that we may have saved, we are culpable.

Dr. W. S. Hoy: In the first place, I desire to compliment Dr. Bouffleur on one thing—that he is a young man just in the very zenith of his manhood. Most young men are inclined to rush in and do amputations for traumatisms sometimes when it is not necessary. He has to-day tried to inculcate a good rule regarding these injuries, and that is to delay. I think the delay necessitated by shock has a great tendency to cool the feverish desire on the part of the surgeon to amputate. I made the remark at Chicago last year, and I repeat it to-day if anything, with more emphasis, that I do not believe any surgeon, who has the good of his patient at heart, will amputate a limb when there is a possibility of saving it. It is a comparatively easy thing sometimes for a surgeon to amputate a crushed limb, rather than to try and save it by long treatment. It is true that we cannot tell accurately the tissues that are involved above the seat of the injury, but it is a bad rule to sacrifice any more of a limb than is absolutely necessary.

The doctor spoke of the antiseptic treatent of these injuries. Physicians to-day, in using antiseptics, are using them entirely too strong, especially the bichloride of mercury.

Let me say, in closing, that I do not think we should ever be actuated to amputate any large member during profound shock. If my patient has got to die because of a mangled limb, I would rather have him go to his grave with it than to amputate it during profound shock.

Dr. Pierce, Illinois: The world is certainly moving, and medical science is progressing. When I studied medicine we were taught that compound fractures of the femur required amputation. That was many years ago, when I went into the military service. Some time after that, we were taught that a gunshot wound of a great joint required amputation, and I have cut off many limbs that I could have saved, had I known as much then as I do now. Conservative antiseptic surgery has replaced the necessity of amputation in compound comminuted fractures, and in gunshot wounds of the great joints, to a large extent. We are here to-day to discuss whether or not a limb can be saved that has been run over by a railroad train. If we had taken a vote a year ago on that question it would have been unanimous that the limb must be sacrificed, particularly where a railroad train has run over it. The essayist is of the opinion that he ought to try to save limbs that have been crushed by the wheels running over them. Whether he has gone a step too far or not, I am still in doubt. It seems to me hardly practicable, hardly possible, to attempt to do much in the way of conserving a limb which has been crushed by the iron horse. But I rise more particularly to detail some experience of my own in the way of saving a lacerated limb that was injured by a reaper. About two years ago last August, while in the harvest field, a little girl had her foot cut off to the extent that all of the tissues, except about an inch of the integument in the posterior part of the leg, the tendo-Achilles and the posterior tibial artery were cut off. Four inches of the anterior surface of the tibia and fibula were cut out in V-shape by the mowing machine. The little girl was anxious to have her limb saved and the parents refused to have it amputated. The consequence is she has her limb yet. It was treated with the most careful surgical antisepsis. A small section was cut off at each end of the tibia and fibula to effect apposition. The limb was then carefully bound up and treated aseptically, and the little girl now goes to school and has the use of the leg. She is obliged to wear a shoe with a brace to it, but no other apparatus or splint. There is nothing to indicate lameness, except a slight irregularity in the movement of the foot. She walks to school a half mile every day and plays and runs about with the other children. There is nothing but cicatricial tissue connecting the foot with her body, except the tendo-Achilles, and a small section of the integument and the posterior tibial artery.

Dr. James B. Hungate: I wish to add my testimony to that of Dr. Bouffleur in saying that it is practicable to save a limb after it has been run over by a railroad car. A case in point: A train backed over a brakeman's foot. It was not going fast at the time, but two wheels of the car passed over the foot. I saved the foot by removing some of the bone,

strictly sterilizing it, and keeping the foot in hot antiseptic water. He was sent to the hospital in Kansas City. He has now a reasonably good foot, and is doing duty as a brakeman on a passenger train. I do not go so far as to say that every limb can be saved, for it all depends upon the circumstances surrounding it. You may or may not save a limb. There are exceptions to the rule. Some of the employes are imbued with the idea that because I saved this man's limb I can save anything. But this is not true. We must be governed by the individual case, and the indications it presents.

Dr. Peck: The gentleman who has just preceded me has borne testimony to one part of railway surgery that I wish to endorse, that is, it is possible to save a foot that has been run over by a railroad car wheel. It would not apply to the iron horse. When the iron horse has gone over a man's foot, the foot is gone. I say this for the reason that I have had some experience in dealing with such cases. Our trainmaster is walking on a foot to-day over which a car wheel passed. The car had to be backed up and the foot or shoe pried away in order to release it. The head of the fibula was removed, as well as a portion of the adjoining bone, and he is walking without a limp to-day.

I succeeded in saving the limb of an employe of the Reading road who had a car wheel pass over it in the presence of several of his associates. The man was afterward killed in a railroad wreck as fireman.

A third case: An Italian who left the hospital two weeks ago had a car wheel pass over his foot immediately above the shoe top. The man weighed two hundred pounds. He is walking about to-day with a comparatively good foot. Young as I appear, I have had twenty-eight years' experience in the service of railway surgery, and during that time have had ample opportunity to carefully observe the cases that we are called upon to treat, and I wish to say that in all my experience I have not heard a more thorough, more exhaustive, more practical paper on this branch of the work than the one I have heard to-day.

Dr. J. N. Jackson, Kansas City: In recent years I have both listened to and read many articles upon the subject of conservatism in traumatic surgery, and yet to me the subject is ever new and interesting. I think there is nothing that marks the progress of modern surgery so much as the ability of conserve limbs which were a few years ago sacrificed. In dealing with traumatism of the extremities the subject of amputation comes up. It should be viewed from two aspects. First, from the aspect of necessity, and second, from the aspect of expediency. In those cases of traumatism to the extremity, where the tissues have been absolutely devitalized by the injury, the question of amputation is one of necessity. There we have before us a part whose function absolutely cannot be restored. Amputation in this class of cases is imperative. There is, however, a second class of cases in which conservatism may be carried too far, and I would here dissent from the statement of Dr. Hoy, who said that wherever a limb could be saved it was the duty of the surgeon to save it. In dealing with traumatism of the extremities, we should remember the principles which I once heard enunciated when this subject was under discussion, namely, that true conservatism puts life first. In dealing with a case of traumatism the first thing to decide is, whether to amputate or save the limb. If life is going to be threatened by radical efforts in either case, we should take the course which will protect the life of the individual. In the second place there are a class of cases in which life is not to be solely considered, in which there is no danger from amputation or efforts of conservatism, yet we must not lay down the rule that even in this class of cases every limb should be amputated or saved, because we do not know. There are cases of traumatism in which the limb can be saved, and yet it is worse than useless, so far as the conservation of the function of the member is concerned. Such functionless limbs had better be sacrificed; they are in the way of the individual. If we can save a limb and make it a useful member, then it is our duty to devote time and skill to the saving of it. But if we have before us a shrunken, withered, misshapen limb, it should be amputated and its function conserved by the application of an artificial extremity.

I agree with Dr. Bouffleur as to the question of saving limbs, and that there is really but one important problem in connection with it, and that is nutrition or circulation. We can save practically any limb, providing the nutritive elements or materials for repair are being car-

ried to the extremity; but if the circulation has been absolutely cut off, it makes little difference in regard to the other tissues, for every effort at conservatism will fail. If nutrition is all right and the surgeon decides it by individual judgment, it is possible for him to save the limb, otherwise not.

Dr. Milton Jay: The paper is an excellent one and deals with a subject which is of great importance. There is only one point I would touch upon, and that is this: A man's foot or leg may be badly crushed, and seemingly the circulation is almost entirely cut off, but the surgeon succeeds in saving the limb. He may have another similar case, and yet in spite of all his skill he will find that he cannot save the limb, and therefore has to amputate it. It is in such cases that malpractice suits are brought. Two of these malpractice suits we have had in Chicago during the last three months. One surgeon testified that he saved a limb as bad as the one in which the other surgeon made an amputation, and says that that surgeon ought not to have amputated. My point is this, brother surgeons should never testify one against another unless they know what they are talking about.

Dr. A. I. Bouffleur (closing): I thank you very much for the consideration which you have given my paper, which was not as complete as I had contemplated. But it has brought out some points that I feel were important. I do not care to take up the time of the association in discussing the paper further, but there are one or two points which I would like to touch upon very briefly and hurriedly. First, in regard to a car wheel passing over a limb. There is no question but that a leg or an arm so injured can be saved. I had a case recently in which the car wheels passed over the forearm at the wrist and succeeded in saving the limb, notwithstanding that it threw the car off the track. I have no doubt that this man, in the course of six months, will have a fairly useful hand.

In regard to the case of the girl whose limb was nearly cut off in a reaper, of course it is similar in some respects to a railroad injury, but at the same time entirely different in that we are dealing with an incised wound, and conservatism is more applicable in incised wounds than it is in those cases where heavy car wheels, with their crushing force, pass over a limb.

The rule that I wish to lay down in regard to amputation has been dwelt upon by Dr. Jackson, and which I hold is the cardinal one, namely, that in trying to save limbs we should only save as much tissue as will be rendered useful. For instance, it is useless to save a finger unless you save the flexor tendons, too; and the same rule holds good in other parts of the body. Unless the saved limb can be made a useful member, it is largely a detriment to the individual, more especially in the case of a leg where we have artificial means that will enable the individual to have a useful member.

RAILWAY SPINE A SPECIES OF INSANITY.*

By Sam'l C. Benedict, M. D., Athens, Ga.

There is one satisfaction to me as I begin the preparation of a paper on this subject, in that I can shift the responsibility for its imperfections to other shoulders than my own. When the request for papers for this meeting was sent out by one of our fellows, and when mine reached me I had my hands full with the preparation of a paper upon another subject, and so wrote, saying that it was impossible to prepare a paper for this meeting in so short a time. In reply I received from my worthy brother a letter, couched in most polite language, saying my excuse was not accepted, because I was not speaking the truth about my time being fully occupied. This epistle, in a measure, hypnotized me! My mind was subjective and I became willing to accept the suggestion to do more work than I was able to, and thereupon wrote another letter, stating that if I would be saved the trouble of selecting a topic and if he would suggest a title that I would do my best. Forthwith came the information that I had been put upon the program for "Railway Spine, a Species of Insanity."

And here I am, still hypnotized, still laboring under the suggestion of my ability to handle this subject, and not even the auto-suggestion of my utter incompetency will dissipate the influence over me. I am allowed no alternative. Poor miserable me! Would that I

* Read at the meeting of the surgeons of the Central of Georgia railway at Augusta, Ga., April 14, 1896.

had never been born, to have to stand before this gathering of scientific men to discuss a subject already threadbare; already so dissected and disseminated that even the final day of meeting will do no more than to bring together mismatched vertebræ and spinal cords, and such a conglomeration of cerebral cortices that not even the sub-conscious mentality will ever be able to recognize the once noble man before he was so unfortunate as to have his spine injured in a railroad wreck. If this railway spine is not in the borderland of insanity, I am, and so please pardon my intrusion and look leniently upon my shortcomings in this article. Whatever merit or demerit may lie in this remember that not I, but my friend and hypnotizer, Dr. J. Howard Williams, is responsible absolutely and wholly for the wreckage.

It is well, at the outset, to state that the term "railway spine" in this paper is used only for such injuries from railway accidents as have left no doubt as to the integrity of the vertebræ from fracture or the cord from damage; that is, those cases in which there is a very serious doubt whether the spinal column or its contents are injured at all. Starting with this premise, we simplify this discussion very much and we are in a better position to draw a logical conclusion between the results of minor injuries in the neighborhood of the spinal column and the more grave and lasting functional disturbances of the cerebrum as terminating in a mental unsoundness, by which the symptoms referable to the back are maintained.

I propose to speak, firstly, of some of the prominent symptoms of railway spine; secondly, of the conditions of mental unsoundness, the symptoms of which are similar to those of the spine, and give evidence that the "railway spine" is in reality a railway brain in a large proportion of cases. At the conclusion of a recent editorial in one of our leading journals, upon "Spinal Injuries in Railway Accidents," the editor asks the question: "But do many people really believe in a railway spine at the present day?"

From the days of Erichsen, the spinal concussion Erichsen, to those of Page (who did more than anyone else to enlighten our minds as to the true pathology in railway spine), it was supposed, and so argued, that all symptoms in the region of the back and limbs following a railway accident were the result of damage to the cord, or, in other words, a concussion of it. That diagnosis is untenable in the light of recent discussion.

Railway spine is defined as "an injury which results occasionally from violent shaking received in a railway accident, having, as a rule, no external hurt to mark the damage done, with symptoms of extreme debility and weakness, in some cases approaching partial or complete paralysis."

This may be a sufficiently explicit definition, but it would seem that even in the mildest cases, where symptoms were early referred to the spine, that there must be bruising, twisting or straining of the tissues external to the columns.

In persons of neuropathic temperaments the slightest jar may produce symptoms of railway spine, a fact which has thrown much light on the pathology of this affection, because it points to a condition of hyperæmia or hyperæsthesia of the cerebral cells, producing what is known as traumatic hysteria, and not a disturbance in the cord itself. Included in the various symptoms are such as pains in the back and elsewhere loss of sexual power, general malaise and weakness of the extremities as well as headache, sleeplessness, loss of memory, vertigo, inability to fix the attention, and others which would point to the brain rather than to the cord for location, so that the spinal cord is not essential, as a factor, for the explanation of the symptoms. Strain of the muscles of the back and the ligaments of the vertebræ have probably been the chief cause of calling attention to the back, and yet most of the symptoms of railway spine can be satisfactorily explained by disordered functions of cerebral centers, and are very closely allied to, if not the same, in defect of function, as those in hysteria, neurasthenia and hypochondria. It would not be accurate to debit to the spinal cord centers and the cord meninges, as is done in spinal irritation and concussion, such symptoms as peculiarly belong to the functional disorders of the brain as sleeplessness, morbid apprehensions, irritability, heaviness in the limbs, formication, mental hypersensitiveness, flushes, chills and impotence, as well as defects in vision, such as asthenopia and amblyopia, or of the ear, like nervous deafness.

Because pressure upon a spinal process and

around the spine produces painful sensations, it is not uncommon to conclude that the seat of the hyperæsthesia lies in the cord, while, as a matter of fact, tender spots over the spine simply refer to the terminals of sensory nerves from the cerebrum, and are not conclusive of spinal irritation any more than tender spots on the scalp are.

The feeling of weakness in the back and loins may be due to fatigue of the muscles themselves—the contraction necessary to keep the trunk upon the pelvis or the limbs in position. The feeling of fatigue is appreciated sooner because the cortex, receiving the impression, is hyperæmic. Again, morbid fears, vaso-motor irregularities and extreme sensitiveness to temperatures are all found in functional cerebral disturbances. One of the most usual symptoms complained of is the loss of sexual power or desire, but this does not necessarily point to an injury of the spinal centers, for the centers of erection and ejaculation are under the control of the brain and may be inhibited by a thought or by fear. Post-mortem examinations reveal nothing, so we adopt the theory of functional disturbances of the central nervous system, without, however, claiming them to be due to malnutrition, irregularity in vaso-motor control or to reflexes from diseased organs. An atrophy of an optic nerve has followed a simple cerebral concussion.

On the other hand, the functional disorders of cerebral cells which furnish symptoms analagous to those of railway spine, so called, are hysteria, neurasthenia and hypochondria, degenerating in some cases into hypochondriacal-melancholia or into dementia.

Let us look briefly into the symptoms of these disorders.

Hysteria belongs to a diseased state of the nervous system, inherited or acquired, and has an infinite variety of symptoms, the most marked of which are easily referable to cerebral disturbances, the principle cortex sufferers being those of sensation and motion. Diseased irritability of these centers give pseudo-paralyses—exalted irritability gives spasmodic seizures. In the etiology of the affection we find, operating as causes, mental and physical shock, violent emotions, severe trauma and psychical shocks, such as found during and after railway collisions or severe wrecks.

In a person easily or already predisposed to it, the slightest injury or shock may produce an attack, the severity of which bears no relation to the violence of the cause. Disturbances of sensation, motion, circulation and secretion, all referable to disturbed cerebral cells, are noticed. Hyperæsthesias and anæthesias of various areas of the body are common; disturbances of the special sensations with hallucinations are among the innumerable abnormal symptoms; also anæsthesias of single extremities, or of spots on trunk or back or limbs, bladder, rectum or vagina, with numbness of different portions of the body.

A hemi-anæsthesia may rapidly change sides or be induced by blisters, metal contact to skin surfaces, or even the patient's expectant imagination may produce it. Among other disturbances of motion we may find spasmodic contractions in every part of the muscular system, or general convulsive seizures may come on as a result of physical or mental shock or from strong emotions. A hemia or paraplegia may attack any and all of the extremities.

Among the symptoms of neurasthenia we find many like those of hysteria, and in addition, anxiety, dread, morbid fears, fears of walking alone, dread of crowds, neuralgias, backache, and excessive tenderness or pressure over the spine. The pain of neurasthenic backache may be along the spinal column or farther outward—at the attachment of the sacral or iliac muscles; sometimes the most prominent symptoms are sensitiveness of the back to slight pressure, or pain without pressure. Pains in muscles and joints are not uncommon. Intense muscular pains in the legs, starting up after remaining quiet for half an hour or so, have become of such severity as to prevent the person from walking at all. Insomnia is one of the most important symptoms of neurasthenia, and is usually present at one time or another during the disease. Hot flashes are frequently complained of by neurasthenics and may be due either to vaso-motor irregularities or simply to disorders (central) of sensation.

Impotence, premature ejaculation, sense of prostration after cohabitation, are often met with among this class of sufferers, and by apprehension may lead to serious mental conditions, even to insanities. Among the causes given, as productive of neurasthenia, are concussion, accidents, fright or mental strain. As

either hysteria or neurasthenia may develop into hypochondria and hypochondria into a condition of mental unsoundness bordering on dementia, or at least as taking the forms of delusion or milder hallucinations and illusions, and as this form is most frequent in persons with a railway brain, let us look a little closely into the symptoms peculiar to hypochondria.

We are all more or less conversant with the symptoms of the hypochondriac.

He is an intense introspector, a first-class egotist; he makes mountains of molehills, and in its fixed development his hallucinations and illusions become delusions which no amount of argument can change. The slightest sensation made upon the body, or a suggestion or auto-suggestion may be sufficient to start a train of symptoms limited in variety and extent only by the amount of information he may have of his anatomy, from hearsay or reading. Every kind of pain, every sensation, from a toothache to a paralysis, may be felt by this poor mortal. The concentration of his attention upon his special disease increases cerebral irritability and so increases the disease and magnifies it until his whole system seems disordered—he believes he will never get well and is a total wreck. Sensations of twitching of the limbs, numbness, pins and needles, heart palpitations and weaknesses of any portion of the body are among the prominent symptoms of this class.

Now, while my desire is to discuss this subject as much as possible from a pathological psychical standpoint, and to avoid a suggestion of malingering, it is almost impossible to keep out the thought that a great number of cases of railway spine are willful malingerers. I use the word willful as distinct from the cerebral condition of the patient in which, while his physical injury is extremely slight, he cannot avoid the cerebral state which forces upon him his delusions, and while we may think that many such persons are keeping up their symptoms and complaints with a view to litigation, yet to them—the non-willful malingerers—the condition is very real. I wish to show that a railway spine is more often a railway brain, and in the majority of non-malingerers may degenerate into such a condition of mental unsoundness as to preclude responsibility.

Page has clearly and interestingly described the surroundings of a severe railway accident, be it collision with all its horrors, or any other accident producing impressions of horror, fright, impending death, cries of the injured, crushing of timbers, escape of steam, darkness, or what not, as producing upon a brain, especially one with a neuropathic heredity or tendency, such a series of tremendous impressions, exclusive of a concussion, as to disturb seriously and for a long time its normal function and to throw the person into a condition of hysteria or neurasthenia or to lead to a hysterical mania, a hypochondria, dementia or a monomania.

In a brain which has received such impressions we have a condition of hyperæmia and hyperæthesia, which may account for every one of the symptoms usually described as attributable to a railway spine. It answers readily to suggestions either from actual sensations, as the result of strain upon parts external to the spinal column, or to blows upon the extremities or trunk. It responds to auto-suggestions of the possible results of such injuries and, as the severity of the symptoms increases by repeatedly referred suggestions to the cortical cells, the disturbance in motion and sensation increases, until all kinds of sensory and motor phenomena develop, even to paralysis. The increased irritability of the cortex, holding sensory cells, increases their functional activity and consequently the possible manifestations of all symptoms which such cells can possibly give to our consciousness. A pressure along the spine, when there is no abnormal condition, may be transmitted along a normal nerve tract and the impression upon its cerebral cells suggest an amount of abnormal condition about the point of pressure, or a distribution of motor impressions from the cortex, as may make real to the individual all the sensory and motor disturbances so prominent in hysteria and neurasthenia. The seat of the disease is the cerebral cortex, not the spinal cells.

An examination of such a patient may be all that is necessary to suggest an unnatural condition of the part examined, and if a direct question be put to him, it may be all sufficient by insinuation to make him really "feel" the suggested condition.

To one who has studied the possibilities of brain function under hypnosis, as being able,

by suggestion, to produce all sorts of sensory, motor or mental phenomena, it is unnecessary to argue to what extent a suggestion to the cortical center of any sense used to transmit the suggestion, may evoke symptoms of abnormal perception, in the patient. Authorities upon insanity state that it is difficult to determine where a true hysteria ends and a hysterical insanity begins, or where a hypochondria of not sufficient intensity to preclude control ends, and a hypochondrical insanity begins.

Looking at it from the standpoint of a mental unsoundness, we might say that when in either condition the opinions of the individual so control him in the transaction of business, in his family relations or with the world at large, as to cause him to conduct himself at variance with the habits of persons in his station of life, that he is insane. Hypochondriacal insanity is usually of a melancholic type; the varieties are manifold, depending, to some extent, upon what portion of the body is under inspection. Let us take now, as illustrative of one type of so-called railway spine, a person of neuropathic temperament and follow up the development of his train of symptoms to see if we cannot draw a conclusion which would confirm an opinion that he not only has no bodily physical injury approaching his subjective symptoms, but may show that he has reached such a state of mental unsoundness as to constitute a species of insanity.

He is in a railway collision of severity. He hears the crashing of breaking material; he feels the sudden stop and is thrown violently about; he hears the cries of seriously injured or frightened persons, or sees them pinned down, dying or dead. Everything has happened with lightning celerity. He may be in darkness with parts of the wreck afire, or possibly some loved one is injured or killed. He himself is apparently unhurt. What strong man can go through such a mental strain and not feel that he is unable soon to get over the impressions made at such a time? Who could soon forget such horrors? The brain has had such tremendous accumulations of impressions rapidly made upon its sensory centers as to throw them into a state of abnormal activity. The batteries have been so charged and shaken as not soon to settle down to a normal current. A hyperæmia of all such shocked cell areas inevitably ensues, and hyperæmia means hyperæsthesia. · Here we have a condition which, in a brain of neurotic heredity or acquirement, does not easily change from a pathological to a physiological state; on the contrary, as soon as the hyperæsthetic cells begin to bring to the consciousness of the individual, symptoms in peripheral areas, of pain, formication, numbness of others errors of referred sensations, then we have developed the apprehension of possible permanent lesions, morbid fears and the dreads of the neurasthenic or contractures, paralyses, etc., of the hysteric. The brain enters, as it were, into a state of hypnosis, ready for auto-suggestion originated by hyperæthetic areas and terminating in (to him) real pathological conditions as to peripheries. Then as the fear of an approaching inability to make his living, to take care of his loved ones, and possibly to be bedridden, the question of remuneration for his damages arises and he becomes a litigant. As the suggestions repeat and repeat themselves the irritability of centers increases, other sensations arise and he soon imagines himself physically a total wreck—possibly he is mentally.

Every sensation of the peripheral nerves is wrongly interpreted by his abnormal cortex, and he becomes impotent. His back is weak, his limbs are numb and he cannot walk. A pressure upon the spine is interpreted by his condition of exaggeration into pain, numbness or paralysis, or even the suggestions of his examiners brings out new disorders. He is worse in that respect than the first course medical student. As this cerebral tax goes on the man becomes a constant introspector. All his thoughts are of himself, and when he has mentally so far progressed into a pathological psychic that he cannot by reasoning or argument rid himself of his delusion; when his illusion becomes a delusion and for whose dissipation there seems to be no relief; then does this poor mortal become hypochondriacally insane—mentally unsound. Then it is that he can convince judge and jury (and sometimes his lawyer) that he has really a railway spine, and as each court term approaches and the suggestion of the necessity that he should not lose, his worse symptoms present themselves to his deluded brain and he becomes worse and worse, and may present a face which gives evidence of a physical wreck. He is mentally not sound; he is morally irresponsible. One

step farther and I have finished. Take again an individual sustaining the same mental shock as the other, but, unlike him, has bruises about his body or a twist and strain of the ligaments and muscles along the spine. Here we have an actual pathological condition which conveys to the brain, already hyperæsthetic, the sensation of a bona fide injury, and which, by repeated suggestions from every motion and touch, keeps up the impression of grave injury on the cortex. If, however, at the time of the accident this person had not had a severe mental shock, and especially upon a brain not neuropathic, then the slight injury would in all likelihood go through the ordinary course of tissue repair, and we have no railway spine.

Much could be said along this line, but my time for preparation and yours for reception is limited. I have accomplished my object, if this brochure has any effect in changing the railway spine of Erichsen to the railway brain of Page, and while the damage done the individual by this transfer of title may be the greater, yet in our study of the subject or in our testimony in such cases, we are nearer the truth when we hold that the brain, and not the cord, is the seat of railway spine, and that the cerebral cortex may be so diseased by the injury and its consequent suggestions and repetitions of suggestions that a species of insanity or mental unsoundness may result.

Gunshot Wound of Spine.

In a recent number of Langdales Lancet, Dr. Jabez N. Jackson reports the following interesting case on account of the non-conformance of clinical symptoms with the location of cord lesion: E. W., colored, male, age 32. About 3 a. m., July 27, 1896, in a quarrel over a woman, was shot in the neck by a ball from a 44 calibre revolver. The ball entered the back of his neck on the left side near margin of occipitoacromial fold of trapezius muscle, about three or four inches above the acromion process, and ranged apparently downward and slightly forward. He was removed to All Saints' Hospital at once, and I was summoned to take charge of case. On examination found wound located as above indicated; man a magnificent specimen of physical strength and vigor. Closer examination showed complete motor and sensory paralysis from the level of the third intercostal space down. Also some priapism. No paralysis, either motor or sensory, of any portion of either arm. Complained, however, of some tingling pain in tips of fingers. Pulse 60, full and strong; respiration 20, free and natural; temperature 100 F. Intellectual faculties unclouded. Abolition of all reflexes of limbs and trunk. The diagnosis of some cord lesion was readily made, and in the absence of disturbance of function of arms, together with the trunk circle of anæsthesia, I located the lesion at about the first or second dorsal vertebra. Wound was dressed and patient put to bed. Prognosis extremely bad. By noon of same day temperature had risen to 104 F., and pulse to 100. At this time patient was examined in consultation by Drs. C. Lester Hall, John Punton and G. W. Grove. Diagnosis of cord lesion was confirmed by each, and probable location agreed as about first or second dorsal vertebra. In view of the hopelessness otherwise of the case, a laminectomy was advised, notwithstanding the usual advice to the contrary, this was agreed to, and assisted by the above named physicians and Dr. B. C. Hyde, our efficient police surgeon. The operation was made at 2 p. m. Without entering into the details of the operation, the laminæ from the sixth cervical to the third dorsal vertebra inclusive were removed, beginning below and working up. We only stopped with the sixth cervical on account of the condition from shock and anæsthetic. Nothing whatever indicative of traumatism of cord in this region was found. Wounds closed with drainage. In one hour after operation, at 5 p. m., patient had reacted from shock and seemed in favorable condition. Temperature, however, had gone up to 105, with pulse 120. At 6 p. m. temperature reached 106, pulse 140. Patient now began quickly to show signs of dissolution, and at 6:30 p. m. died, a little more than twelve hours after injury.

Post-mortem: The coroner's post-mortem showed that the ball entered left side of body at fifth cervical vertebra just internal to transverse process, and passed through body into spinal canal, where it was found less than one inch above the upper line of our operation. Unfortunately in removing ball the cord was so destroyed by the assistant that it was impossible to tell anything about the character of the original lesion.

The interesting feature of the case is the absence of those symptoms which would be expected from injury in this region, namely: (1) paralysis, almost complete in arms; (2) dyspnœa and diaphragmatic breathing; (3) difficulty of speaking and weakness of voice. The hyperpyrexia which occurred too soon after injury to be septic, is usual, however, in injuries to the lower cervical region, and should have been a partial guide.

Most physicians, as they grow greater in skill, grow lesser in their religion.—Massinger.

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CONSERVATIVE SURGERY.

The late James Adams Allen, many years Professor of Medicine in Rush Medical College and still familiarly spoken of as "Uncle Allen" by hundreds of medical men in the Northwest, used to say that he could not understand how so good and great a man as Moses Gunn, who occupied the chair of surgery in the same institution, could be satisfied to do the "carpenter work of medicine." In those days the surgeon was looked upon as a mechanic, skilled in cutting living tissues, while the practitioner of medicine, it was held, must be quite a philosopher in order to succeed; but the developments of modern surgical pathology have made it necessary for the man who would succeed in doing well the "carpenter work of medicine" should be even a greater scholar and a more profound philosopher than his confrere who declines the use of the scalpel, but wields the stethoscope and clinical thermometer.

One of the most important papers read at the last meeting of the National Association of the Railway Surgeons was that contributed by one of Chicago's younger surgeons, Dr. Albert I. Bouffleur, which we publish in this issue. This paper is certainly a demonstration of the fact that operating is not all of surgery, and that many useful limbs may be saved by refraining from operation. It also demonstrates that the successful, conservative surgeon employs the highest skill and must possess the very best of judgment. He is, indeed, a philosopher and the work which he does is not the "carpenter work of medicine."

Dr. Bouffleur's paper contains, we think, several serious lessons, which all younger surgeons, especially, will do well to heed. We would particularly emphasize the following:

"One need not look far to find surgeons who are performing amputations on the same principles that were taught decades ago, when the effects of the ever-present suppuration made conservatism and attempts at restoration of function worse than useless—dangerous. The old argument that delay meant sepsis and that sepsis left death in its wake, should surely not be given much weight in these days of enlightenment. Antiseptics and drainage have eliminated all danger of serious results from the reasonable postponement of an amputation. The surgeon who practices on the basis of modern bacteriological knowledge, does not fear the slight toxæmia which results in all cases when dead or dying tissue is left in contact with the living.

"There can be no doubt, it seems to me, that an amputation is only indicated in traumatic surgery when the soft parts are so crushed and disorganized that repair of the injury is absolutely impossible, or if it should take place the injured member would be useless.

* * * * * *

"While it is true that in many cases we can decide at once as to the necessity for amputation, yet in a large number of cases it is absolutely impossible to formulate a positive opinion until at least 24 and possibly 48, or even more, hours have elapsed. I desire to emphasize the fact that, while the general condition of a patient is manifested by signs and symptoms which admit of reasonably accurate interpretation, the indications as to the extent of the local injury are so uncertain and unreliable that a limb which presents all the clinical evidences of death may in a few hours glow with the warmth and color of life.

Notes of Societies.

New York State Association Railway Surgeons.

SIXTH ANNUAL MEETING, ACADEMY OF MEDICINE, NEW YORK CITY, NOV. 17, 1896.

Papers.—1. "Modern Methods in the Treatment of Fractures," by Dr. R. H. Cowan, Radford, Va.

2. "How Can We Best Secure Immobilization in Compound Fractures at or Near Articular Processes?" by Dr. Z. J. Lusk, Warsaw.

3. "Immobilization and the Treatment of Fractures at the Elbow Joint," by Dr. J. H. Glass, Utica.

4. An address, "Injuries to the Head," by Dr. Roswell Park, Buffalo.

5. "Relief and Hospital Department," by Dr. Frank H. Caldwell, Waycross, Ga.

6. President's Address, by Dr. C. S. Parkhill, Hornellsville.

7. "Traumatic Neurasthenia," by Dr. J. E. Walker, Hornellsville.

8. "Cases of Apoplexy Following Some Time After Accidents," by Dr. William Browning, Brooklyn.

9. "Cranial Injuries," by Dr. W. A. Ward, Conneaut, O.

10. "Distinctive Features of Railway Surgery," by Dr. S. Harnden, Waverly.

11. "Granulation Surfaces," by Dr. John Van Duyn, Syracuse.

12. "Chloroform Anæsthesia," by Dr. Webb J. Kelley, Galion, O.

13. "Injuries to the Eyeball," by Dr. Samuel Mitchell, Hornellsville.

14. "Railway Surgeon and Corporation," by Dr. W. B. Outten, St. Louis, Mo.

15. "Patron and Employe," by Dr. George Chaffee, Brooklyn.

16. "The Hospital Association and the Law," by Clark Bell, Esq., New York.

17. "Acute Infective Thecitis," by Dr. A. Llewellyn Hall, Fair Haven, N. Y.

Papers are limited to twenty (20) minutes and are the property of this society. The headquarters of the society during the meeting will be at the St. Cloud Hotel, Broadway and Forty-second street.

George Chaffee,
Chairman Executive Committee.

At the recent meeting of the Mississippi Valley Medical Association the following officers were elected for the ensuing year: President, Dr. Thomas H. Stuckey of Louisville; first vice-president, Doctor Charles A. Wheaton of St. Paul; second vice-president, Doctor Paul Paquin of St. Louis; secretary, Doctor Henry E. Tuley of Louisville. The next meeting will be held in Lexington, Ky., on the last Tuesday in October, 1897.

The annual meeting of the New York State Association of Railway Surgeons, under the presidency of C. S. Parkhill of Hornellsville, will be held on November 17, 1896, at the Academy of Medicine, New York City.

C. B. Herrick, Troy, N. Y.,
Secretary.

Obligation of Professional Secrecy.

The Kitson-Playfair sensational suit continues to receive marked attention from the medical press of this country and England. Such a subject must always be of great interest to physicians. The views expressed regarding this celebrated trial are almost as diverse as the writers.

The Northwestern Lancet of June 1, 1896, in commenting editorially, finds the best statement of the case to be that made by a writer to the Times, who maintains that the "knowledge gained by the doctor in the pursuit of his calling is not something confided to him to be used at his own discretion for the best welfare of society in general, but a confidence made to a physician by a patient as simple information furnished for one particular purpose; that is, that the physician may be able to give the disease, be it mental or physical, the best treatment." Here is a definition that may be commended to the medical profession. It covers the ground completely and without ambiguity, as far as the question of moral obligation is concerned. The legal obligations that apply to professional secrecy vary in different countries, and it goes without saying that they must be observed, and that there is no breach of confidence in disclosures required by law, such as the notification of contagious diseases, since people have no excuse for not knowing that such laws exist, and when they make their revelations to the doctor they do so with the understanding that he will give the legal notification. There are many situations where the physician must exercise his own judgment, but with such a leading principle in mind as that given above he is not likely to go far astray.—Medicine.

Medicine Up To Date.

Physician of the New School (after turning X-ray on the patient)—Your case is a somewhat complicated one. There is slight trouble with your left lung, and I observe enlargement of the liver and fatty degeneration of the heart. Kindly hand me that $2.54 in your right-hand trousers pocket and I will prescribe for you.—N. A. Medical Review.

Extracts and Abstracts.

The Sterilization of Hypodermic and Other Syringes by Boiling.

By Charles A. Powers, M. D., of Denver, Colo.

However simple and efficient may be our present aseptic technic, there yet remain many minor details in which our methods fail to give entire satisfaction. We have hitherto been unable to sterilize injection syringes in which the piston and washers are made of leather. This difficulty is now, however, happily overcome by Hofmeister of Tübingen, who, in the Centralblatt f. Chirurgie, July 4, 1896, sets forth a method by which we may render these important instruments absolutely aseptic.

His procedure rests on the principle that leather may be boiled at will in plain water after previous hardening in a formalin solution. The plan is as follows:

1. Only such syringes may be sterilized as consist of glass, metal and leather. The metal parts must be united by solder or screws, rather than by cement.

2. The piston and washers are removed and freed from lubricating fat by ether.

3. They are then placed in a two to four per cent formalin solution for twenty-four to forty-eight hours.

4. After the formalin has been washed off, the syringe may be put together and is then ready for boiling.

5. All air should be removed by working the piston back and forth while under water; the syringe may then be boiled at will in plain water (thirty minutes should suffice).

I have thoroughly tested this procedure on a number of hypodermic, exploratory and aspiration syringes, and can verify Hofmeister's statements in every particular.

Apparently the only change which the leather undergoes is a darkening and a slight thickening. Previous to immersion in the formalin solution, it may be well rubbed with gauze, dipped in ether and after sterilization, it is to be again lubricated with sterilized oil. If the piston consists of two pieces of leather separated by an oil-space, I have found it well to insert the first of these in the glass barrel before boiling. A moderate swelling of the leather may necessitate trimming its edge with a sharp knife.

I have put an ordinary hypodermic syringe through this sterilization process four times, at intervals of two days, without apparent change in the leather. What its limitations are as regards repetition, time will determine. It may be that the leather will have to be removed from time to time. However this may be there are so many sources of infection in these syringes (exploratory aspiration of pus, for instance), and absolute asepsis when making injections is so much to be desired, that I am certain that this simple procedure will find wide employment.—Medical News.

Case of Traumatic Tetanus Successfully Treated With Veratrum Viride and Gelsemium.

In a recent issue of the Medical News Dr. Fordyce Grinnell of Pasadena, Cal., reports the following interesting case:

Guy B., a boy, aged six, while playing in his yard, barefoot, cut the ball of his left foot on a piece of glass. The wound apparently healed. Some nine days after (April 14), he complained of stiff jaws and difficulty in swallowing. These symptoms increased until, on the night of the 16th, tetanic spasms began to manifest themselves. The cicatrix of the wound was cleaned and scraped. It seemed somewhat tender on pressure, but no foreign body was discovered. The site was scarified, however, and turpentine and oil applied, and four-grain doses of ammonium bromid were given every two hours.

As no perceptible improvement was noted, on the 17th Norwood's tincture of veratrum viride was given, at first one drop every hour, then two drops every hour. As this did not seem to prevent the return of the spasms from time to time, fluid extract of gelsemium was given, at first in drop doses every hour, in conjunction with the veratrum, then in two-drop doses, and finally in three-drop doses. The veratrum was also increased on the 20th to three drops every hour, so that the child was taking three drops each of the veratrum viride and the gelsemium every hour, and it seemed to require this amount to control the spasms. This dosage was continued for forty-eight hours. Only once during this time did it produce active vomiting, or sufficient nausea to require an opiate to control it. When this relaxed condition was obtained, the drops were decreased to two of each on the 22d, and on the 25th to one of each, which was continued until the 27th, when the interval was lengthened to two hours, and gradually thereafter discontinued.

The ammonium bromid was given in three to four grain doses every two hours during this entire period.

The remedies in diminished doses were continued to the 30th of April, when the boy could open his mouth without difficulty, had a good appetite, was playful, but more boisterous in his manner than usual, or, as his mother said, "more nervous."

The remarkable thing to me was the tolerance in one so young of such powerful reme-

dies in such doses. It seemed to require these doses to control the conditions producing the tetanic spasms. The instructions were to decrease the amount and frequency of dose when distinct signs of nausea appeared or the signs of convulsions abated.

I had been led to think that veratum viride might prove a valuable remedy in traumatic tetanus, as it had done in puerperal and other convulsions, and that gelsemium, in its peculiar action in causing relaxation of the muscles of the jaw, might prove a valuable adjunct, and in this case these remedies did not disappoint.

(380) Suture of the Heart.

Cappelen (Norsk Magazin for Lœgevidenskaben, March, 1896), reports the following case: A man, aged 24, had some hours before admission received a stab from a knife in the left side. He went home alone, and about an hour afterward was found lying in a pool of blood. He was brought to the hospital in a cab, and on admission was found to be unconscious; the pulse could not be felt, but pure, though weak, heart sounds could be heard to the right of the sternum, on a level with the fourth rib; the impulse could not be felt. In the fourth left intercostal space, in the middle axillary line, parallel with the rib, was punctured, non-bleeding wound 1 c.cm. long. After a camphor injection the patient began to breathe and the pulse could be felt. The left side of the chest did not move in respiration. Under chloroform narcosis a resection of the fourth rib was made after enlarging the wound. The pleural cavity was filled with partly liquid, partly coagulated blood, compressing the lung. After evacuating the blood, which was estimated to be about 1,400 c.cm., the lung dilated and was found not to be wounded. By resecting 5 cm. of the third rib a wound 1 cm. long could be seen on the pericardium, bleeding freely. The sac was filled with coagula, and on enlarging the opening a wound 2 cm. in length was seen on the left ventricle, causing the bleeding. The wound was sutured and an artery tied, after which the hemorrhage ceased. The needle was brought half way through during a contraction and then dropped, and when the heart dilated after a second contraction the point was grasped and the needle brought completely through. The suturing was made very difficult by the rythmic movements of the lung, which covered the whole operating field, and by the heart contractions, which, however, were perfectly regular and quiet all the time. The pericardial cavity was emptied of clots as far as practicable. The pulse after the operation was very quick and feeble, but improved after a subcutaneous saline injection. The patient sank gradually, however, and died two and a half days after the operation. At the necropsy it was found that a large branch of the coronary artery had been wounded; the wound had begun to heal, but there was evidence of pericarditis, and various bacteria were found in the fibrous exudation. The knife had passed through the pleura in front of the lung without wounding it, and again through the pleura and pericardium into the heart.—British Medical Journal.

The Treatment of Fractures.

The subject of fractures (says Dr. Andrew J. McCosh, Medical News, July 11) has in recent years, in this country at least, been somewhat overshadowed by the advances in operative surgery. American surgeons have however, always manifested a keen interest in the repair of fractured limbs, and many of the most important methods for the treatment of this class of cases have been devised and perfected by them.

For the treatment of fractures of the lower extremities two new methods, or, rather, modifications of old methods, have been recently proposed in Europe and have already been employed to a considerable extent in the United States. Each of these possesses features of novelty and also of practical utility. Each is worthy of more extensive trial.

The first is the method of "massage and mobilization," which has been systematized and strongly advocated for the past six years by Lucas Championière. He claims that this method is revolutionary and paradoxical, and one absolutely new and contrary to the theory and practice of surgeons. Such terms are, however, extreme, for the plan is not entirely novel, though it has never before been carried into execution in such a systematic and thorough manner as is advocated by this surgeon. According to this method, immobilization of the limb is avoided. Massage is begun at once—the sooner the better—and employed daily until the bones have united. The seances, as a rule, last fifteen to thirty minutes. At first the manipulations must be gentle, and pressure should not be made directly over the ends of the fragments. In the intervals the limb is supported merely by a flannel bandage evenly, but not tightly, applied by sandbags alone. Splints or other immobilizing apparatus are not employed. The claims advanced for this method are: Rapid disappearance of pain and swelling, prevention of and more rapid absorption of the œdema and infiltration of the soft parts and of the effusion in the joints, preservation of muscular nutrition, and the more rapid formation of a firm callus. As a consequence, the fracture is followed by but little stiffness of either muscles, ligaments, or

joints, and as soon as the bone is united the function of the limb is fully restored and the patient thus saved weeks or months of pain, stiffness and disability. In certain cases, however, the originator of this plan grants that his treatment cannot be carried out in all its details. When the mobility of the fragments is so great that there is danger of a permanent deformity, or when the ends are so sharp that manipulation is apt to produce repeated traumatisms of the soft parts, or where the vitality of the skin has been endangered on account of the severity of the injury, the use of massage should be postponed for a week or two and the limb may be even confined for a few days in splints. There can be no question but that in certain cases this plan of treatment possesses advantages over the recognized treatment by complete immobilization. For example, in fractures of the radius or of the fibula, the period of inability will probably be considerably shortened. It is not, however, a safe method to employ in every case of fractured leg. The risk of bony deformity is probably increased, and it is very doubtful if either the patient or surgeon will be satisfied with a crooked limb even at the expense of a shorter and an easier convalescence. In many cases this method must prove a dangerous one, and it therefore cannot be recommended for routine practice.

The other method is the so-called ambulatory plan of treatment for fractures of the lower extremity, but especially of the leg. The method is not entirely novel, for at different times it has been used by surgeons in this city, though perhaps not in the systematic manner in which it is now practiced in Holland, Germany, and in our own country. Plaster of paris has always been largely employed in this country, and has been especially popular in New York and Boston, in which cities, indeed, its use has been for many years almost universal in the treatment of fractures of the leg. The fracture box has happily disappeared, and in most of our city hospitals is not to be found in the surgical armamentarium. According to the ambulatory plan of treatment, the use of the plaster splint is carried to a still greater state of perfection. It is claimed that the patient can get out of bed a few days after the accident, and can walk at the end of the first week, with the assistance of one crutch or a cane. About twelve years ago, it became the custom of several surgeons in this city to encourage their patients to get out of bed as soon as possible, and often they would be able to walk on the injured limb at the end of a week or ten days. This plan, however, which only differed in a few details from the method now called the ambulatory, seemed to have fallen into disuse, in part, perhaps, due to the custom in our hospitals of handing over the treatment of fractured legs to the hospital internes, many of whom have habitually enveloped the limbs in rolls of cotton underneath the plaster. The ambulatory treatment, as systematized at the present day, consists in the use of a plaster splint snugly applied, without the use of cotton on the leg, but with this addition: that on the sole of the foot, underneath the splint, is placed a pad of cotton about three-quarters of an inch thick and slightly deeper at the heel. This splint grasps the leg firmly about the bony prominence, especially at the upper part of the leg and head of the tibia. The leg thus hangs suspended to a certain extent in the splint, the greater weight being borne on the bulging part of the leg below the knee, the sole of the foot being separated from the splint by the pad of cotton. The principle is the same as that taken advantage of in the use of an artificial limb, though, of course, the avoidance of pressure at the end of the limb is less perfectly accomplished. In a few cases this splint can be applied immediately before swelling has resulted. Generally, however, this is impossible, and it is then wise to delay its application for four or five days, so that it may not be rendered unserviceable by the shrinkage of the limb. The short period of confinement to bed and the preservation of muscular nutrition are the main advantages of this plan of treatment, and as a result the general condition of the patient remains good and his period of invalidism is much shortened. It is not, however, a method adapted for all cases. In a considerable number the pain is so great that the patients cannot walk; in others, the weight of the splint or timidity prevents locomotion. In some cases the shape of the upper part of the leg prevents proper support; in others, the obliquity of the fragments is such that there is considerable risk of overriding and ultimate shortening, and in still others, the laceration and contusion of the soft parts is too severe to warrant the early application of the splint. Experience seems to show that the ambulatory splint can be used with distinct advantage in from 30 to 40 per cent. of simple fracture of both bones of the leg and in nearly all cases of fracture of the fibula. The same principle may be occasionally employed with advantage in the treatment of fracture of the knee, though, of course, the apparatus must be of a different pattern.

One fact must not be forgotten in the trial of new methods—that is, that there is no class of cases, either in surgery or medicine, where the medical attendant is liable to meet unjust criticism or suits for malpractice as in cases of fractures where a perfect result has not been obtained. Caution, therefore, should be exercised in the employment of methods which have not received the general sanction of surgical authorities.

Miscellany.

The Hippocratic Oath.

Under the above title Dr. W. S. Brown of Stoneham, Mass., writes as follows of the Kitson-Playfair case in a recent issue of the Times and Register:

The recent trial in London, Kitson vs Playfair and wife, opens up a serious question for the medical profession to answer, namely, is a physician justified, under any circumstances, in revealing a secret confided to him? The defendant, Dr. William S. Playfair, is a professor of obstetrics in King's College, London, with a lucrative practice in fashionable circles; and the jury has awarded the plaintiff, Mrs. Kitson, damages amounting to $60,000, for betraying a professional secret. The circumstances are briefly these: Mrs. Kitson is an Australian lady, wife of Mr. Arthur Kitson, the husband's reputation for morality being rather below par. At all events, the lady has had four or five miscarriages, and has been under some doctor's care most of the time since her marriage. She came to England alone, towards the end of 1892. Latterly she was attended by Dr. Williams, who called Dr. Playfair in consultation. On February 23, 1894, she was placed under chloroform, and examined by both practitioners. Dr. Playfair, during the legal trial, testified that "he found the neck of the womb dilated to the size of a five-shilling piece." He found a spongy mass inside, which "he at first took to be an intra-uterine cancerous growth. The mass was not growing from the interior of the womb, and it was easily scooped out and removed. On removing the mass, he specially examined it, and found it to be a small portion of fresh placental tissue, of a spongy consistence, and containing fresh blood in its interstices. He said to Dr. Williams, 'she must certainly have had a recent miscarriage.' The mass removed was not a blighted ovum."

This last remark referred to a statement by Dr. Spencer, professor of midwifery in University College, London, who was "of opinion that the body removed in February, 1894, might have remained in the uterus since October, 1892. What witness was shown was a piece of a dried blighted ovum."

Dr. Playfair also testified that "the plaintiff had told him, prior to the operation, that she had not menstruated since December, or thereabouts, and that menstruation had always been regular." During the cross-examination he stated that "he had formed an opinion adverse to the honor of the lady on February 23, and still holds it."

I do not propose to discuss the legal aspect of this case; but, there are two or three points which require to be taken into account in forming an opinion as to its medical bearings. The husband, Mr. Arthur Kitson, is a brother of Dr. Playfair's wife. The sum claimed as damages was only $25,000, and the jury gave a verdict for $60,000. On account of relationship, Dr. Playfair made no charges for his professional services.

I do not know whether Dr. Playfair ever took the Hippocratic oath or not. Oaths (except profane ones) are going out of fashion nowadays, and with good reason. They are a remnant of barbarism. For no honest man is more likely to tell the truth after swearing to do so than before; and dishonest men do not usually stick at trifles. Here is a verbatim copy of the Hippocratic Oath, taken from the Sydenham Society, edition of the works of Hippocrates:

"I swear by Apollo, the physician, and Esculapius, and Health, and All-Heal, and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation—to reckon him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this Art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none others. I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; and, in like manner, I will not give to a woman a pessary to produce abortion. With purity and with holiness I will pass my life and practice my Art. I will not cut persons laboring under the stone, but will leave this to be done by men who are practitioners of this work. Just whatever houses I enter I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and, further, from the seduction of females or males, if freemen and slaves. Whatever, in connection with my professional practice, or not in connection with it, I see or hear in the life of men which ought not to be spoken of abroad, I will not divulge as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the Art, respected by all men, in all

times! But, should I trespass and violate this Oath, may the reverse be my lot!"

The Hippocratic Oath (minus its Pagan and local features) is no longer administered to medical graduates; but its essential principles are as worthy of observance to-day as they ever were. Is a physician justified, under any circumstances, in revealing a secret confided to him professionally? I reply, no, emphatically no! And there are at least two good reasons which seem to me to settle the question.

First, the uncertainty of histological and pathological evidence. Here we have two obstetricians, occupying chairs in celebrated London colleges—not tyros, but experienced, talented teachers—one of whom testifies that a spongy mass, removed from the uterus, is a piece of fresh placental tissue, and the other that it is a piece of a blighted ovum! Since the trial, a writer, in the British Medical Journal, says

"Chorionic villi are very prominent, pretty-looking objects, when seen in microscopic sections, but it is not always that we can swear to them. Other structures may simulate them. Admixture with blood may partly destroy the villi, and greatly modify their appearance. * * * The very nature of the placenta offers great difficulties for evidence of the kind required for legal evidence."

I admit that cases occur in which the proofs of conception are decisive; but it is surely our duty, in all doubtful cases, to give our patient the benefit of the doubt, and keep the suspicion to ourselves I think that a physician is not even justified in expressing his suspicions to a consultant He should first be absolutely sure. A woman's moral character should not be impugned on the doubtful evidence of microscopic sections.

Second, the notorious uncertainties of the law itself. This very trial demonstrates the unreliability of legal opinions. The lawyers on both sides wriggled through a quagmire of doubt. In every case, a conscientious man must make up his own mind what his duty is, and be governed by that, regardless of legal consequences. It would be better to go to jail for "contempt of court," than go to Coventry for betraying a patient's secret. During this trial, the question was raised whether Dr. Playfair was not privileged to tell his wife, as a family secret. I hold that a secret ceases to be a secret at all when told to anybody; and the last person a physician should gossip to is his own wife.

The essence of the Hippocratic Oath is embodied in the French law, which makes "the betrayal of professional confidence a punishable offense." In the state of New York, the law says, "No person duly authorized to practice physic or surgery shall be allowed or compelled to disclose any information which he may have acquired in attending any patient in his professional character." I am told that there is no special law in Massachusetts anent betrayal of professional secrets; but the injured party could prosecute under the common law.

In this comparatively enlightened period, physicians do not need an oath to induce them to keep professional secrets; most of them do so. If a medical practitioner is not prompted to remain silent from a sense of honor, he is likely to do so from a sense of pocket; for a man must be a fool who habitually lets out his patients' secrets.

As far as law is concerned, I do not see why we are not as much entitled to professional privilege as lawyers or Catholic priests. A lawyer is not compelled to divulge his client's confession; neither is a priest. I claim that our profession is as necessary to public welfare as either law or religion—in some respects more so—and that it should be our privilege, as it is our duty, to keep the essence of the Hippocratic Oath.

To Drive Away Flies.

Dr. H. S. Baketel of Derry, N. H., writes: "Many practitioners of medicine among the poorer classes are greatly annoyed by flies in the sick room. The annoyance to the patient is doubly great. Such, at least, was my experience not long since on New York's great east side. An excellent safeguard against these pests is the sweet-pea flower. The Lathrus maritimus, the purple variety, grows near the seacoast from New Jersey around to Oregon, and beside the coasts of the Great Lakes. The Lathyrus ochroleucus is found on the hillsides from New England to Minnesota, and even further West. It is distinguished by its small, yellowish-white flower. Either of these varieties can be grown in the sick room, and the sweet odor emanated seems very offensive to the ordinary house fly."

Silver In Surgery.

Although the ophthalmic surgeon has long recognized the efficacy of silver as an antiseptic, Professor Credé of Dresden has recently presented the further claims of this metal to the attention of the general surgeon. Lactate of silver is an excellent germicide, but its easy solubility (in fifteen parts of water) renders it rather dangerous as a dressing. The citrate, however, is only soluble in 3,800 parts of water, and is therefore quite safe. It is found that a dilution of silver of even 1-80,000 still retains appreciable antiseptic qualities, while a solution of sublimate weaker than 1-20,000 is worthless. A novel suggestion is the use of

thin sheets of metallic silver spread upon linen cloth as a protective dressing in surgery. It is claimed that even in the occurrence of suppuration, the action of the products of the bacteria produces a lactate of silver, which prevents their further development.—Medical News.

The Employment of Asbestos for Dressings.

The Union médicale for July 18 contains an abstract of a review of a report made by Mr. Volintzeff to the Surgical Society of Moscow, which was published in the Gazette des hôpitaux. The results of the author's investigations are summed up as follows: The density of this product is much greater than that of cotton or of tarlatan; it is less porous than either of them and less hygroscopic. The escape of vapors takes place more slowly under a dressing of asbestos than under all others. It is not as good a conductor of heat as cotton is, but on this point, says the writer, the results of the investigations are not yet perfectly satisfactory. Asbestos absorbs the albuminoid solutions better than absorbent cotton or tarlatan does. In regard to the clinical observations, says the writer, M. Volintzeff thinks they are yet too small in number to enable him to give a definitive judgment. The product is not expensive, because it may be used several times.

The Right to Practice in England on an American Diploma.

An English court has recently decided that an American physician with a genuine diploma from a recognized medical school is at liberty to practice medicine in Great Britain, but must not assume any titles implying that he is a registered British practitioner. The case was that of an American who appended to his name the letters, "M. D., U. S. A.," and the court held that there was no attempt to claim qualifications other than those implied. The Medical Defense Union, which undertook the prosecution, was condemned to pay costs amounting to about £800.—The Medical Record.

Iodide of Starch in Surgery.

Majewski (Wiener med. Presse, 1896, No. 19; Centralblatt für Chirurgie, August 1, 1896) recommends iodide of starch as an excellent application in suppurating and neglected wounds, phlegmons, panaritia and venereal sores. A mixture of one part of tincture of iodine and two parts of starch, he says, exceeds iodoform in antiseptic action and in controlling suppuration. It is exceedingly hygroscopic, almost odorless, and very agreeable.

Notices and Reviews.

The Stomach; Its Disorders and How to Cure Them. By J. H. Kellogg, M. D. Battle Creek, Mich., 1896.

It perplexes one to know just how to take this book, whether as a book intended primarily for physicians or for patients. If for the former it is in most respects a failure. The crude cuts, the crude and half-complete description of physiological processes, the condensed quiz-compend style used in relating the symptoms of disease, make it of no value to a physician who has studied physiology, anatomy and the rudiments of practical medicine. Some of the hints as to treatment and the more accurate diagnosis of digestive failures of the stomach, are not without value to the practitioner. Nor is the book much more of a success if it is intended for the patient as a "home physician." In the preface the reader is evidently regarded as a layman: "The individual who wishes to make use of this work as a means to his own recovery, must first of all carefully read the entire work. He should then seek, either with or without the aid of a physician, to arrive at a correct diagnosis of his case. If possible, the services of a skilled physician should be employed, a test meal taken and the methods of examination described on pages 134, 320 and 352, utilized. * * * The nature of the disorder being determined, it will be easy, by the aid of the table of contents or the index, to turn to the section which deals with this form of digestive disturbance; and then having become familiar with the causes of the trouble, and the means of preventing its aggravation, such rational methods of treatment as will be efficient, and it is believed, successful in a majority of cases, may be carried out at home." We predict that if the average dyspeptic reads these pages he will be sure that he has in turn, ulcer of the stomach, cancer, all the forms of dyspepsia, five, we believe, are described, dilated stomach, etc., etc., and that the only sure way of saving his life is to rush to the Battle Creek Sanitarium and have Doctor Kellogg put in charge of his case.

Many of the directions, e. g., the diet lists, the use of baths, the simpler massage movements, will be valuable in the home treatment of patients. Some, e. g., many of the mechanical Swedish movements, and the low tension sinusoidal current, will be extremely perplex-

ing, to say the least. He will have some difficulty, too, in understanding what is meant by the elaborate methods of examining the stomach contents, "coefficients of digestive work," the classification of functional disorders of the stomach (p. 144), etc.

Some of the cuts are good, particularly those showing massage and Swedish movements. Others are wretched, e. g., the ones on pages 50 and 30. The plate opposite page 128 intended to initiate the layman into the mysteries of bacteriology, shows twenty-eight kinds of micro-organisms. If the plate is taken from someone else it should have been so stated, for as it is, we have to make Dr. Kellogg responsible for giving us representations—and not very good ones at that—of "micrococci arranged in groups of four, found in the sputa of consumptive patients," the "bacteria termo," "bacterial termo" and "bacterium aceti," the "bacillus of malaria, found in the blood in cases of malarial fever."

On the whole, the book will, we believe, add to Dr. Kellogg's reputation with the laity. But it will add little or nothing to the respect in which he is entitled to be held by the great body of practitioners because of his unusual natural ability, the good scientific work he has done, his wonderful versatility, his far-reaching and whole-souled charity.

J. B. H.

A Manual of Obstetrics. By W. A. Newman Dorland, A. M., M. D. Philadelphia, Penn.: W. B. Saunders, 1896.

This is one of Saunders' New Aid Series, and is a credit to both author and publisher. Upon the whole, it is one of the best manuals of obstetrics we have seen and should prove of value to students and practitioners alike. Instead of the usual arrangement into chapters, the work is divided into two parts, Part I being devoted exclusively to physiologic obstetrics, and Part II to pathologic obstetrics. To the former is given 200 pages, while the bulk of the work, about 500 pages, is devoted to pathologic obstetrics. In each part the subjects are systematically arranged, and "reference is made easy by a system of paragraphing, italicizing and numbering." The author has introduced into the text quite a number of tables for differential diagnosis, which add considerable value to the book. The illustrations and diagrams, of which there are a large number, are in the main very good. We notice a number of excellent cuts, showing the various positions and presentation, which are reproductions, reduced in size, of original drawings used in Doederlein's manual, published in 1893, and for which no credit is given. We cordially recommend Dr. Dorland's manual as one that is up to date, and that would prove of value to students as a guide to the study of obstetrics, and to the busy practitioner as a reliable work of reference.

Neuronymy.

At the last meeting of the American Neurological Society, Dr. Bert G. Wilder presented the report of the Committee on Neuronymy.

Among the recommendations of the committee were:

1. That the adjectives dorsal and ventral be employed in place of posterior and anterior as commonly used in human anatomy, and in place of upper and lower as sometimes used in comparative anatomy.

2. That the cornua of the spinal cord and the spinal nerve roots be designated as dorsal and ventral rather than as posterior and anterior.

3. That the costiferous vertebræ be called thoracic rather than dorsal.

4. That the hippocampus minor be called calcar; the hippocampus major, hippocampus; the pons Varolii, pons; the insula Reilii, insula; pia mater and dura mater, respectively, pia and dura.

5. That, other things being equal, mononyms (single-word terms) be preferred to polyonyms (terms consisting of two or more words).

A Remedy for Black-Eye.

There is nothing to compare with the tincture of strong infusion of capsicum annuum mixed with an equal bulk of mucilage or gum arabic, and with the addition of a few drops of glycerine. This should be painted all over the bruised surface with a camel's hair pencil and allowed to dry on, a second or third coating being applied as soon as the first is dry. If this is done as soon as the injury is inflicted, this treatment will invariably prevent blackening of the bruised tissue. The same remedy has no equal in rheumatic sore or stiff neck.—Medical Progress.

The honorary degree of Doctor of Medicine has been conferred upon Bismark by the University of Zena.

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CAPITAL OPERATIONS WITHOUT ANÆSTHESIA AND THE USE OF LARGE SALINE INFUSIONS IN ACUTE ANÆMIA.*

By J. J. Buchanan, M. D., Pittsburg, Pa.

Mr. President and Gentlemen:—The question whether a given patient, suffering from loss of blood and nervous shock caused by the crush of an extremity, can endure the further traumatism of a capital amputation and live, is one which every surgeon whom I address must frequently meet; and on the wisdom of his decision may hang the fate of his patient. The question of prompt or delayed amputation in crushing injuries of the extremities has been debated by all surgeons, but I am sure that every one of you, whatever ground he may take in discussion, treats every case he meets on its own merits. If the shock and loss of blood are slight he operates at once; if they are profound, his patient pulseless, bedewed with cold perspiration, vomiting, with sphincters relaxed, he always delays. In the intermediary cases, however, where the loss of blood has been great, the pulse feeble and the delay of a few hours produces no evident change in the patient's condition, notwithstanding the vigorous use of heart stimulants and external heat, he regards the case as one calling for the utmost discrimination. Sad experience has taught him that in these cases the briefest anæsthesia and the quickest amputation are often followed by profound collapse and death; on the other hand, he has learned that delay also has its evils, but little less pronounced.

About four years ago I read a paper before the Association of the Surgeons to the Pennsylvania Company, advocating a thorough dis-

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., April 30, 1896.

infection of the injured part and delay of operation till complete reaction had been established, a period of several days if necessary. Numerous trials of this method have convinced me that a limb so severely injured as to require amputation and exposed to infection by the vulnerating body, with perhaps large amounts of visible dirt, cinders, grease and other foreign bodies ground into its substance, with countless nooks and crannies open to infection and perhaps many already infected, the devitalized portion, soon to be gangrenous, still attached to the living parts—numerous trials I say of the disinfection of such limbs have convinced me that with the means now at our disposal it cannot be done with any degree of certainty. I bring this subject of disinfection of mangled and infected limbs before you to learn your experience in this matter. In numerous cases in which I have endeavored to disinfect a hopelessly mangled limb and keep it aseptic for days till reaction should be thoroughly established and amputation safely done, I have employed every antiseptic precaution customary in capital operations including thorough scrubbing of the skin, copious douching of the lacerated and separated muscles and bones with sublimate solution, the removal of foreign bodies and visible impurities, the removal with scissors of all tag ends and partly separated tissues, including often the limb below, which usually hangs merely by the skin and a few tendons or shreds of fascia, packing of every nook and cranny with iodoform gauze and the application of a moist dressing of sublimate gauze. In spite of the most minute and painstaking care, I have found that as a rule these crushed extremities do not retain the characteristics of an aseptic wound. Now, when I read in a "Systematic Treatise on Surgery"* that, under these circustances, decomposition can be prevented in nearly every case, I am led to inquire of you whether this is your experience. It certainly is not mine.

The destruction of the high hopes which I had entertained of being able to tide such patients in perfect safety over the period of shock and acute anæmia brought me again face to face with the dangers of delay. Do not understand me to say that this mode of treatment by disinfection and delay is not in many cases the best that can be pursued, but that it by no means assures the safety of the patient and the aseptic condition of his limb.

On the other hand, the loss of two profoundly debilitated patients from shock, following primary amputation under ether anæsthesia, led me to consider the part that the etherization might have taken in the fatal result. I know that it is the prevailing opinion that ether is not a depressant, but I am convinced that the depression following operation is often due to a considerable extent, to the anæsthetic. While seriously considering this phase of the matter, about two years ago, a man was admitted to my hospital service with a crushed leg, requiring amputation just below the knee. He had lost a great deal of blood and, notwithstanding free stimulation, his condition was such as to make me somewhat doubtful whether he would survive an amputation under ether. With his consent I made a formal amputation below the knee without any anæsthetic other than the whisky with which he had been plied. I was surprised at the very trifling pain which the amputation caused and the absence of any added depression or shock from the operation. The patient improved at once and recovered. Very soon afterward a similar case was admitted, requiring an amputation just below the shoulder-joint. In this case, also, an amputation without anæsthesia was made, with apparently little pain and little additional shock, and the patient recovered.

Three cases of craniotomy, with elevation of depressed portions of the skull, done on perfectly conscious patients, added to my confidence in this procedure.

One morning about ten months ago a man was admitted to my service with a limb crushed to the knee. About ten o'clock the previous night he had been run down by an engine, whose wheels had passed over the limb. The hemorrhage had been severe and, when admitted, he was almost in a state of collapse. At ten o'clock I saw him and introduced into his circulation, through a canula in the popliteal vein, two quarts of normal saline solution. The improvement was marked and immediate. His pulse became stronger and slower, his lips red and his general appearance more hopeful. His condition, however, was still not such as seemed to me to warrant amputation. In two or three hours his powers again declined, and

*Moullin's Surgery, P. 151.

at 1 o'clock two quarts more of the saline solution was introduced into his circulation through the same vein. At four o'clock the same quantity was introduced in the same way. The pulse was now of such a quality that it seemed probable to me that a rapid thigh amputation, without anæsthesia, would give the man his best chance for recovery. He consented to the operation and I amputated at the lower third of the thigh without any anæsthetic except whisky, and with but little pain or further depression of the heart's action. The man recovered. I call attention to the fact that, in the space of six hours, six quarts of solution was introduced into his circulation with the most marked benefit. To many surgeons operation without anæsthesia will doubtless seem a step backward, but, in the light of my own experience, in the cases just outlined, as well as in others, I am sure that this procedure, coupled with the use of large saline intravenous injections, will save some lives that would otherwise be lost.

I crave your indulgence for wandering somewhat from the strict letter of the title of this paper and beg to add, as a summary of it, the following statements:

1. Patients with limbs so crushed as to require amputation, who are in good general condition, should be operated on at once.

2. Those who present evidences of severe shock and great loss of blood should be treated by external heat and stimulants, including the hypodermic use of whisky, digitalin, strychnia and nitro-glycerin and the rectal injection of whisky, strong coffee and hot water. The crushed limb should be disinfected as completely as possible and a six per thousand saline solution of not less than two quarts for an adult be allowed to flow into a vein, this infusion to be repeated, if necessary, at intervals of a few hours, according to the effect produced.

3. If by these efforts complete reaction should be established, anæsthesia and amputation should be proceeded with as in ordinary cases.

4. If, however, a moderate or doubtful reaction only should occur, the propriety of a rapid amputation without anæsthesia should be seriously considered, if the consent of the patient be gained.

5. The complete disinfection of crushed, lacerated, dirty and infected limbs usually cannot be accomplished.

6. The sooner such limbs are removed, the better, provided the patient's life be not lost in the operation.

7. If, notwithstanding the vigorous treatment just mentioned, an amputation, either with or without anæsthesia, be fraught with great risk, it is far better to disinfect as thoroughly as possible, drain well, pack all open spaces and take the chance of infection, which, in most doubtful cases, is probably less than the risk of death from shock following operation.

DISCUSSION OF DR. BUCHANAN'S PAPER.

Dr. Evan O'Neil Kane, Pennsylvania: I heartily agree with the doctor, that the danger of shock is greater than the matter of anæsthetic in those cases where there has been considerable loss of blood. However, with ether instead of chloroform, we commonly find a small amount has the same effect. A small amount of ether will relieve pain. Pain, as well as loss of blood, play an important part in railroad injuries in the production of shock. Our grave mistake is made in leaving a limb badly mangled after injury in order to wait for the patient to rally from shock, because there are two important factors that keep up shock, one oozing from many small vessels, possibly the opening of a plug in a large vessel. When the worst of the shock has passed off the oozing will not be sufficient to do away with the good of saline solution. If we put a tourniquet on to prevent oozing, we subject the patient to much pain, also to the risk of mortification. The cinders ground into the limb must be removed, and it stands to reason that there must be more or less septic material in the cinders, and if we wait for the patient to rally in order to get out the cinders, we lose valuable time and we ought to amputate at once, removing the cinders with the piece of limb.

Dr. W. H. Elliott.—It may increase the shock in these cases to give an anæsthetic, but I have never seen it do so. Of course, this is a matter in which the surgeon is obliged to use judgment. In cases of profound shock from the crushing of a limb, it takes a very small amount of the anæsthetic to produce insensibility, so small, indeed, that I am loth to think that it adds to the shock. In the warm climate in which I live, after having used ether almost exclusively for fifteen years, I have for

the last ten years gone back to the use of chloroform, unless there is some special reason why I should not use it. I do not believe that it adds to the depression in these serious cases.

Dr. P. Daugherty: Some years ago I met Dr. Link of Indiana. I asked him what anæsthetic he used and he replied "whisky." I said, "Don't give anything else," and he replied, "very seldom." I have never seen it tried myself, although I often give whisky before giving chloroform. I began to administer anæsthetics forty years ago, have never given ether in my life, and am too old to commence now, as long as we have chloroform.

Dr. Milton Jay: This is an interesting subject, and whether a major or capital operation should be done without an anæsthetic or not, is a point that cannot be decided except by the surgeon in charge of the case. There is something about the nervous system of individual cases that we do not understand. We find, at times, great sensibility to pain, and then again insensibility to pain. We find sensitiveness to touch, without sensibility to pain. I have seen cases in which there was sensibility to touch, yet no ordinary amount of cuttting seemed to give pain. In cases of great shock we find that a stimulant alone will prevent the patient from suffering very much. Even a little whisky may do in certain cases, and an anæsthetic need not be used, but such cases are the exception.

Dr. Pierce: It has been my experience that the use of whisky increases the sensitiveness of patients. Giving the patient a drink of whisky makes it more difficult to bring him under the influence of chloroform, and increases the sensitiveness. Every surgeon will bear me out, that the most troublesome patients to treat are those who are half intoxicated. They are the most difficult to manage, most sensitive to pain, and make more trouble than patients not under the influence of liquor. I can conceive of no use to which whisky can be put in producing anæsthesia, unless you make the patient stone drunk. As to the relative merits of chloroform and ether, we are opening a very broad subject, and one that we cannot definitely settle. There is a wide difference of opinion on both sides. Some years ago, at a coroner's inquest in Boston, it was said that a lady had died in a dentist's chair from the use of chloroform. The coroner's jury brought in a verdict of manslaughter against the dentist, because ether had not been used instead of chloroform. The weight of judgment of the profession now is largely toward the use of ether by reason of its safety. If a patient has kidney trouble and an examination of the urine indicates albuminuria, I would not use ether. Ordinarily, I think it is safer to use it. If any trouble should result, the weight of professional opinion would be on your side, not because it is easier to use. I agree with Dr. Daugherty in regard to chloroform as a preference. I have given it a hundred times where I have given ether once, and I prefer it to ether. I have seen no bad effects from its use.

Dr. W. S. Hoy: I did not expect to take part in this discussion, but since the matter of anæsthetics has come into the debate, I would like to get an expression of opinion from the members of this association as regards what anæsthetic they would use in the majority of cases. For twenty-one years I do not remember of having given ether in a single instance. (A rising vote was taken at his juncture and 105 members showed their preference for chloroform to ether, while 16 preferred ether to chloroform, when there was no special contraindication to its use.)

Dr. W. S. Hoy (resuming): I desire to say a few words regarding the paper of Dr. Buchanan. I shall only touch upon one or two of the valuable points the distinguished gentleman made. Realizing, as I do. that Dr. Buchanan comes from Pittsburg, and knowing the high esteem his co-laborers have for his ability as a surgeon, I can truthfully congratulate this association on the honor we enjoy in having him with us to-day. While many of us look with distrust and doubt upon the ideas the gentleman would attempt to inculcate, still we must of absolute necessity weigh carefully the ideas advanced, and by the usual instructive discussions arrive at a satisfactory conclusion regarding the merits of his paper. I am constrained to ask the question, are we advancing or retrograding? It looks like a bold step forward, and, on second sight, it is equally apparent that it is a step backward. The doctor explains, in his usually instructive manner, that in capital operations he executes the operation without the use of an anæsthetic, simply gives whisky. Now I shall not consume much of

your time in the discussion of this part of his paper, yet I do feel that it will be of paramount importance and interest to look at the action of the "whisky" he proposes to administer and see just how he obtains the desired results from this source. What is the effect of alcohol and its compounds? I am free to confess that whisky is, beyond doubt, an anæsthetic and paralyzant, therefore the question simply resolves itself into the individual's constitutional ability to withstand its physiological effect. You all know that some persons will take only a small portion of spirits and lose the power of exact co-ordination. My experience leads me to the conclusion that in a vast majority of cases it acts at once as an anæsthetic, lessening the rapidity of impressions, the power of thought and the perfection of the senses.

Take, for instance, a single ounce of alcohol administered internally, and what do we find? Diminished nerve activity, diminished cerebral activity, impairment of the co-ordinating power of the brain, as well as marked lessening of muscular strength. Let me fully impress one idea, and that is this: I know of no substance in the entire materia medica which more rapidly wastes and destroyes brain cells and impairs the tissues, than alcohol and its compounds. The very first full realization of its effects is what? Do you call it a stimulant? Have you failed to fully realize the depressing effect upon the cardiac vaso-motor and respiratory nerve functions? Not to say anything of the attendant loss of tone in the heart and blood vessels.

Take, for instance, the case of a moderate drinker of whisky, and what do we find? At once a dilatation taking place in the vessels of the liver and spleen, and corresponding interference with all the natural metabolic processes taking place in these organs. I am sure of one thing; the Doctor, if he obtains the desired immunity from pain for his patient in these major operations, he must realize that the absolute effect of whisky, when it comes in contact with the nerve centers, is invariably that of a narcotic, paralyzant and anæsthetic, no matter what the dose may be, the effect only differing in degree according to the size of the dose. Now, I cannot for my part see the benefit the distinguished surgeon obtains from using whisky in preference to the grandest anæsthetic the world has ever known, chloroform, and for my part I would oppose the whisky for several good reasons. Among a few I might say the rapidity of its absorption from the stomach and circulation throughout the system. If used hypodermically, the very moment it gets into the blood it diminishes the interchange of oxygen and carbon deoxide through the lungs, and thus retards tissue metabolism generally. The very presence of whisky in the circulation impairs the natural affinities and functions of the red corpuscles, hemoglobin and albumen of the blood, thereby diminishing the internal distribution of oxygen and retarding molecular or metabolic changes, whether nutritive, disintegrative or secretory. I know that my very learned friend, Dr. Outten, will tell you that by the constant diminishing of the internal distribution of oxygen, and the activity of the leucocytes, whisky directly diminishes vital resistance to the action of all morbific causes. When does this action begin, if it be the result of long continued saturation of the system with whisky? Do we not have the starting point from the very first profound drink, that would be required to do the capital operation without pain?

Dr. Robert Barclay: I rise to make an inquiry. I would like to know whether there are occasions when it is necessary for the railway surgeon to operate on patients in the sitting posture, and if so, what anæsthetic would he use for that work. It is the custom of aural surgeons to place patients in the sitting posture, in order that they may keep the field of operation free from blood, so as to finish it and see what they are about.

President Murphy: I will ask those who would change the anæsthetic, in order to operate upon a patient in the sitting posture, to rise. (Not one member rose.)

Dr. W. B. Outten: The chief element of Dr. Buchanan's paper has not been touched. I maintain that in the direction of shock, that of all the remedies that have ever been suggested (and I have watched them closely and carefully) none equals the normal saline injection. You can prate about whisky, strychnia, etc., all you please, but there is this condition which exists in shock, namely, a partial paralysis of one side of the heart which arises in consequence of lack of sufficient quantity of blood supplied to the heart. With the saline solution you fill the vessels and there is response of car-

diac action. I have never injected a quart of normal saline solution in the flank, before undertaking operation, but what this fluid has disappeared like magic, and along with it we have had an improvement in the pulse so as to enable us to proceed with the operation. I would give up all remedies, if necessary, in preference to doing away with the normal saline solution in cases of shock.

As regards the doctor's idea of whisky, I believe it is not original with him, and he did not so claim, but Dr. Link, I understand, has operated entirely with the anæsthetic effects of whisky and claims to get good results. When you give a stimulant you do essentially what yould should not do—you make the heart beat itself to death. If my theory of shock is correct, and it is the accepted theory at the present time, and the doctor fills his heart up with normal saline solution, probably it, along with the stimulants, may accomplish the result (that is, with the whisky) and get rid of the anæsthetic. The doctor has given us a good principle and we should at least try and see if there is anything in it.

Dr. Martin: With reference to chloroform and ether anæsthesia, ever since I have been practicing medicine, I have been congratulating myself that I could perform operations without torturing my patients, as my fathers and your fathers did, and I would dislike to accept the recommendations set forth in the paper in a general way.

Dr. John L. Eddy: I have used chloroform for a great many years, and have had quite a number of cases of suspended animation. Only last week a strong, healthy man stopped breathing shortly after the administration of chloroform, although his pulse was beating steadily all the time, but his respiration stopped for a long time. My experience has been that in nearly all cases where trouble has followed the administration of chloroform, it has been the result of paralysis of the muscles of respiration and not of the heart. In cases of profound shock there is nothing that will arouse a man so thoroughly and quickly as to insert both thumbs in the anus and dilate the sphincter ani. Every man who has done considerable rectal surgery knows that, and if you do not believe it, the next case you have of suspended animation, try it.

I was a little surprised to hear Dr. Pierce's statement, that down in Boston a coroner's jury indicted a man for manslaughter, because a woman had died in his chair from the administration of chloroform. In the section of country where I came from, we should indict them for womanslaughter. (Laughter.)

When we come to see the difference in the opinions of eminent surgeons, one using this and the other that, we are led to wonder why it is that so many people live in spite of the doctor.

If I had a case where I had any suspicion of heart failure or weak heart, I would use chloroform with pure oxygen gas. One drachm of it inhaled with pure oxygen is sufficient for any operation. Pure oxygen gas alone is one of the greatest restoratives we have. I invariably use the Esmarch inhaler. It is the safest one. The great trouble in chloroform is in getting too large a quantity at one time, but with the Esmarch inhaler we get it drop by drop. In the case I spoke of that occurred last week, where the man stopped breathing, I used the Esmarch inhaler. It is the only inhaler that the surgeon should use in giving chloroform.

Dr. Trainer: A word in regard to stimulation in shock. I fully agree with Dr. Buchanan as to the use of saline solutions. We all realize their efficacy and the doctor who spoke from the platform a moment since struck the keynote when he called our attention to the fact that many times we have this condition owing to dilatation of the heart, but he did not mention the fact, but took it for granted that we knew, that the arteries were also dilated at the same time, so that they are not properly filled by the impulse of the heart. In connection with the saline injection, about the only heart stimulant I use is strychnia.

In regard to the choice of anæsthetic, if a man is accustomed to using chloroform in preference to ether, he can use it more satisfactorily and more safely that he can ether, and vice versa. Personally, I prefer chloroform. When we have a death from chloroform it is a common observation that it occurs at once, while the patient is on the table; whereas, with ether, many of the deaths attributed to the operation, perhaps a week or two weeks after the patient was operated upon, are due to the after-effects of the ether.

Dr. T. B. Greenley: Speaking of resuscitation from the effects of chloroform and stop-

page of respiration, my plan is to throw cold water in the face of the patient, and as a rule he catches his breath and goes on breathing. This is a good way to bring about reflex action of the respiratory muscles. I have done that in two instances with satisfactory results. Many years ago I used chloroform as an anæsthetic more frequently than I do now. I agree with the doctor, who spoke of it that stretching of the sphincter ani with the two thumbs excites reflex action as quickly an anything.

Dr. Buchanan (closing): I had no idea that my paper would be the means of eliciting a discussion of such magnitude. The essence of it was confined to three propositions, one of which has not been touched. The first was that very large saline infusions—at least two quarts, repeated two or three times in the course of a few hours—were beneficial in cases of shock from loss of blood. Secondly, there were rare cases where the patient stood a better chance for life from a rapid amputation without any general anæsthetic, either chloroform or ether. Thirdly, that the disinfection of these terribly dirty and mangled limbs could not be carried out so that the limb would remain septic for days.

I must confess that I was a little astonished at the result of the vote brought out by Dr. Hoy. Some of the old men here remember the time when amputations were done without an anæsthetic, and I have no doubt that if they recall the condition of patients whose limbs were amputated without an anæsthetic, and the condition of similar patients to whom either chloroform or ether was administered, they will find it to be materially different. The patients whose limbs I have amputated without a general anæsthetic have had a dry skin, not any more moist than before the operation, and with no additional evidences of shock. Whereas, we are all familiar with the very low condition of the ordinary patient whose limb is amputated under an anæsthetic, when the amputation is done under very adverse conditions, so that the only way that this matter can be settled is to compare cases of amputation with anæsthesia and those without anæsthesia. That I have done, and I am satisfied that in those cases in which the anæsthetic has either been withdrawn or omitted, the benefit to the patient has been very much greater.

I have been misunderstood with reference to the use of whisky as an anæsthetic. I am familiar with the work of Dr. Link. He makes his patient absolutely drunk. It is not my desire to get the full effect of the whisky to the stage of drunkenness.

"A CASE OF STRANGULATED INGUINAL HERNIA, WITH UNUSUAL MEDICO-LEGAL ASPECT."*

By Dr. Allen Staples, Dubuque, Iowa.

On March 6, 1896, early in the morning, I was summoned to see H. B., brakeman, aged 28, who had been severely injured in the abdomen. He said that while following his regular occupation he had been passing from one car to another, and by a sudden jerking of the train had been thrown violently against the hand-rail. The injury had occurred about 1 o'clock in the afternoon previous, and he stated that there had never been any trouble with his groin before.

When I saw him he was somewhat pale, but a well nourished and vigorous looking man, and did not look very ill or anxious. In his right inguinal canal there was a large swelling, ten inches by three by one, not very tender, and with no impulse on coughing. The abdomen was soft, flat and comparatively free from pain. There was but one testicle, the left, in the scrotum. While there was no contusion visible, there were evident signs of strangulation. For several hours he had been showing these symptoms, such as shock, persistent vomiting, and some spasmodic pain. Several enemata had been given to him without any result. Assisted by a physician who had been called, I attempted taxis as long as I thought advisable, under ether, but in vain.

As all his symptoms steadily grew worse I took him at once to Finley Hospital and operated at 10 a. m. the same day, assisted by Drs. Boothby and Walton.

The pubes were shaved and washed and I cut down upon the large swelling in the right groin. Very quickly a dark colored tense sac was disclosed. My incision was about four inches long, coinciding with the long axis of the tumor. On opening the sac about a drachm of blood or bloody serum came away.

*Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, May, 1896.

The next thing that came to view was a tense blackish, shining, ovoid mass, about as large as a fair sized orange. This mass was evidently altered omentum; behind and below it was a testicle of considerable size which appeared to be inclosed in a sort of mesorchium, which contained moreover an apology for a cord and an imperfectly developed epididymis. Below the latter and severely constricted by the pillars of the ring was a large loop of the colon. On introducing the finger into the canal it was seen to be enormously dilated, the protrusion being backward into the abdominal cavity. This had obviously resulted from distension of the vaginal process. The gut was very intensely injected and dark and covered by adherent layers of clot. With considerable difficulty, as the bowel seemed to be in a recoverable condition, a very tight cartilaginous constriction in the peritoneal neck of the sac was divided and the gut returned. The testicle, as it seemed impossible to place it in the scrotum, was removed and the spermatic artery tied with catgut. An examination of it showed that in addition to some adhesions to the omentum, the cord seemed to be twisted upon itself and the epididymis transformed into a small fibrous mass.

The testis proper was small and had suffered cystic degeneration. The large oriental mass spoken of, which seemed more or less gangrenous, was ligated with catgut and removed. What seemed to be the remains of a double-necked sac was cut off flush with the peritoneum, after being tied. The opening into the abdomen was closed by catgut, lacing up the inguinal canal as recommended in Wood's operation.

The after history of the case was uneventful. There was no rise of temperature and no bad symptoms developed. In two weeks the patient was able to sit up, in three weeks to get about and in four weeks to leave the hospital. But the patient and his friends still insist that he never had any lump in his abdomen or trouble with it previous to the alleged accident on the day before the operation. It was reported to me by an outsider, however, that the patient had some time previously been treated by a physician for a swelling in his groin. The treatment had consisted of hypodermic injections into the tumor. On being questioned upon the matter by myself the patient denied ever having had any such treatment, and with his friends began to make vague statements about the indemnity he expected from the company for his severe injury. Obviously in settling the question as to indemnity, considerable stress would be laid upon the fact as to whether the hernia was a recent one or an old one, and it is to this point that I desire to call your attention.

In the first place I regard it as improbable, though not at all impossible, that so large a hernia could take place in so short a time.

In the second place, the large amount and the density of the adhesions would strongly negative the idea of a recent hernia, and in the third place, such extensive gangrene, which, together with the adhesions, I strongly suspect to be partly due, at least, to the injection treatment, could hardly have taken place in so short a time as had elapsed between the receipt of the injury and the operation. Lastly, and most important of all, the cryptorchism which I found would most positively disprove the statement of the patient and his friends. To bring this out clearly I purpose to discuss the subject briefly.

Englisch, in treating the general topic of congenital cryptorchism describes precisely the condition in which we found the patient's testicle. According to him, in adult life the seminal canals have disappeared, the cellular tissue has increased and a fibrous mass finally takes the place of the seminal canals. This change takes place more often when the testicle lies in the inguinal canal than when it remains in the abdomen. At first the organ in the canal is movable, but finally, in consequence of inflammatory adhesions, its movability decreases year by year. The vaginal process of the testicle is rarely a closed sac but is usually open toward the abdomen, especially when the epididymis is present. The latter is usually, as in our case, degenerated into a small fibrous mass. The vas deferens and testis itself are frequently the seat of cystic degeneration, as we noted in our patient.

Another feature also remarked by us in our case, and occasionally the cause itself of strangulation, was the twisting of the cord and epididymis (mesorchium).

The cause of the retention and twisting of the testicle is very difficult to discover. It

has been thought to have been due to some intra-abdominal adhesion, which had retarded the descent of the epididymis and spread it out between the layers of the mesorchium. This would also account for the tilting of the body of the testicle, which we found, which caused its upper part to be directed downward and forward, for whatever it was that retarded the epididymis would probably act first upon the lower part of it. The twisting was probably caused by the continual downward pull of the gubernaculum testis, modified by the resistance of the adhesion, spoken of above. A testicle retained in the inguinal canal is moreover exceedingly apt to be complicated with hernia, and not unfrequnetly with strangulation. As in our case, the hernia both of omentum and bowel passed beyond the testicle through the inguinal canal, and being unable to descend into the imperfectly developed scrotum, rose toward the ilium, and formed the enormous mass that we described.

König, in writing of the subject of congenital adhesion of the testis with the omentum, as we found in our case, says that the testicle always becomes adherent in fœtal life and especially with that portion of the omentum called "omentum colilcum Halleri." Moreover, he states that this class of hernias is much more common on the left side than on the right. Indeed, one author, Luihart, states that he has never known any hernias complicated with undescended testicle save those upon the left side. In this particular our patient was a novelty.

Mr. John Wood, in his classical work, "Lectures on Hernia and its Radical Cure," states that hernias complicated with retained testes are invariably of the congenital variety, and Mr. Curling says if the testicle does not come down by the end of the first year it will certainly sooner or later be accompanied by a hernia. All of the authorities whom I have consulted advise that if the organ has degenerated it should be removed, and if it still apparently is able to perform its function, it should be placed in the scrotum. In either of these alternatives the reason given is to avoid subsequent hernia with its dangers.

I think you will all agree with me from what I have said above, that if the question were asked me on the stand as to whether to the best of my knowledge and belief the hernia from which my patient suffered was a new one or an old one, I would have no hesitation in affirming the latter to be the case.

The Extension of the Practical Application of Röntgen Rays.

The following editorial comment appears in a recent issue of the University Medical Magazine.

In the March issue of the Magazine we briefly described the practical application of the discovery of Professor Röntgen as far as it had been developed at that time. Since our report the use of the new radiation has been greatly extended. The June number of the Magazine contains the reproduction of a skiagraph showing a "jackstone" in the esophagus of a child, two and one-half years of age. This case came under the care of Dr. J. William White, at the University Hospital, and is, we believe, the first instance in which a foreign body has been detected in the trunk of the body by this means. A glance at the plate impresses the immense value of this new aid in diagnosis.

The August number of the American Journal of the Medical Sciences contains an article on the "Practical Application of the Röntgen Rays in Surgery," illustrated by a number of excellent plates representing interesting surgical conditions that could not be so lucidly portrayed in any other manner.

The application of the new ray in medicine up to the present time has been much more restricted. The shadows of the heart and liver are well seen, and the outlines of other organs are faintly perceptible. It is by no means to be considered, however, that the full utility of the radiation has as yet been discovered, and both surgeons and physicians are confidently looking forward to developments that will lend still more general assistance in diagnosis.

The construction of the flouroscope is being perfected, so that, at present, the necessary information may be obtained without the trouble and delay of making a skiagraph.

The Laboratory of Clinical Medicine of the University Hospital is already equipped with a Röntgen plant, and by October 1 another complete plant will be installed in the Department of Clinical Surgery.

Medical Service of the Paris Exposition.

Dr. Gilles de la Tourette has been appointed physician-in-chief to the Paris Exposition, to be held in 1900. There will be an exhibit of objects illustrating the progress of medicine and surgery.

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LISTERISM.

Very recently a largely attended meeting of The British Association occurred at Liverpool, and at a banquet in honor of Sir Joseph Lister, who was accompanied by many other notable medical men, it was said by the one proposing the toast to the distinguished guest of honor: "He (Lister) had the keen, scientific insight to observe the relation between the myriad germs, which Pasteur discerned, and surgical fever. He carried these investigations further by scientific investigations of the utmost beauty and skill. It was clear to him that the entry of these poisonous particles, and the changes they produced had all along been the source of the evil, and he revolved in his mind the problem of excluding them. Year after year this inquiry was the great object of his life. The difficulties were successively overcome, and he found that surgical fever no longer attacked his patients. The great truth was duly made known, and encountered the skepticism and opposition which all new truth and all new untruth rightly meet. But by degrees doubt and opposition vanished, and to-day the skilled opinion of the world has accepted aseptic or Listerian surgery as a priceless boon to mankind. It is difficult to overestimate the benefit thus conferred on mankind in every part of the world. From Western California all around our globe, in America, Europe, the civilized parts of Africa and Asia, to Eastern Japan; from north to south, wherever trained skill is attainable, the splendid discovery of our guest is daily saving life and preventing suffering, and this it will do as long as knowledge and civilization remain. His reward is a great one, since he must know that he has probably saved more human life and prevented more suffering than any other man now living."

To be deserving of such words as these is truly the highest reward of human activity. Fame has no more to bestow.

The event above mentioned is full of meaning to the mind of the every-day working surgeon; full of significance in an historical sense, full of worth in a thoroughly practical direction. To Lister does the world indeed owe much. It stands indebted to him not alone for his patient research, and his discovery, but for the long years of ceaseless championship in support of his position, until he is able to-day, before time has dimmed his memory or blocked his powers of reason and discernment, to appreciate the universal acceptance of his teachings, the incomprehensible benefit to mankind and the restfulness that belongs to the conqueror as well in mental and logical, as in physical realms. To the general surgeon asepsis now means almost everything in the accomplishment of success, and it probably means more to the railway surgeon than to one following any other line of distinctive surgical work, for he has but little chance to prevent infection. The emergency surgeon must take it for granted that infection has preceded him, and he, therefore, is required to oppose forces already arrayed against him. In such cases force must combat force, and the knowledge gained by the sagacity and determination of Lister is the key to the situation, while the perseverance and practicability of the disciple becomes the means through which that knowledge works to the desired end. This is, in all instances,

the preservation of tissue, the conservation of function, the limitation of sepsis—"surgical fever"—and the saving of human life.

THE PHYSICIAN AND THE PUBLIC PRESS.

The following items are clipped from the editorial column of the Columbus (Ohio) Dispatch. We refrain from comment, as we have no further knowledge of the row, but the editorials well illustrate the feeling of the lay press and a large part of the people, relative to medical advertising, professional interviews and reports of operations in the daily prints:

"In finding Dr. R. Harvey Reed guilty of a violation of the code of medical ethics in connection with the publication of a report of a most successful surgical operation in a daily paper, the Academy of Medicine has not exhibited either that fairness or liberal spirit or that sympathy with the spirit of modern progress that might naturally be expected from a body of intelligent men who belong to one of the greatest of professions. This drawing of the line between professional and daily papers is an evidence of professional prejudice that is not at all creditable to the physicians who have given countenance to it.. But they might as well expect to dam the mighty Nile as to check in this way the progress of the newspaper or hide under the bushel of professional exclusiveness the light of individual success."

"THE MEDICAL PROFESSION.

"The case of Dr. R. Harvey Reed calls attention to the fact that the medical profession is the only one of the once only great professions—law, medicine and theology—that still keeps up many of the old barriers of exclusiveness. There was a time when all of them wrapped themselves up in more or less mystery and were inclined to bid the uninitiated stand aloof. They were as a rule very sensitive to anything that smacked of intrusive familiarity on the part of the general public.

"But most of these barriers have gradually given away under the leveling processes of modern inquiry and development. The professions no longer monopolize learning as they formerly did. The masses of the people know a great deal more than they used to know, and they also know the difference between actual knowledge and the mere profession of knowledge. The dignity of professions is no longer the dignity of tradition but the dignity of knowledge. They simply share this dignity with all other occupations. Every business is dignified that is honorable and that represents intelligence and character. All this has tended to improve and strengthen the professions, for it has had the effect of weeding out of them the shams and pretentions, that at one time infested them and were safe from assault because they were protected by the artificial sanctity that enveloped them.

"The medical profession has been more inclined to resent this modern intrusion than the others. It has hugged its secret rites more tenaciously. It has clung more closely to its Latin formulæ. It has been more sensitive to the inquiries of the newspapers as the representatives of the people, into its doings and methods, and has been disposed to resent it as impertinent familiarity. It has been behind no profession or occupation in its advancement in learning. Its members can hold their own in point of intelligence and capacity and character with the members of any other profession. And as to the good its members are doing, not only in relieving suffering and saving life, but in adding their contribution to the world's progress, too much praise cannot be given to them.

"At the same time we believe the profession makes a mistake in opposing newspaper publicity to the extent that it does. The masses of the people do not have access to medical publications. They depend almost entirely on the daily papers for information on current events. They are interested in surgical operations and their interest is a natural and eminently proper one. If the publication of the details of an operation incidentally gives credit to the one who performs it, that does not render it any the less interesting or instructive, though it may strike a sore spot in the breasts of some physicians who chance to belong to a different school of practice or to be interested in a different school of instruction.

"It will not hurt the profession any to take the people into its confidence and let them know more of its doings and its methods. Indeed it will do it good. People know more now than some doctors seem to think they do. This very intelligence, if the doctors could but see it, enables them to better understand and appreciate the physician's learning and skill. Moreover, the people will continue to get sick and need the services of doctors, so that there is no danger that the profession will run any risk of losing its occupation."

Dog-Tail Sutures.

It is said that the tendons found in the tail of a dog make better sutures than either catgut or kangaroo tendon, when properly prepared in sublimate.—Peoria Medical Journal.

We have not only multiplied diseases, but we have made them more fatal.—Rush.

Notes of Societies.

The Pan-American Medical Congress.

As already announced in The Railway Surgeon, the Pan-American Medical Congress will convene in the City of Mexico, November 13-16, 1896. A cordial invitation is extended by the International Executive Committee to the medical profession of the United States to attend and participate in the meeting. The titles of papers to be read should be sent at as early a date as possible to the secretary, Dr. Eduardo Liceaga, Calle de San Andres, num. 4, Ciudad de Mexico, D. F. Republica Mexicana, and all those who contemplate attending should send their names and addresses as early as possible to Dr. C. A. L. Reed, St. Leger place, Cincinnati, O. Dr. Reed writes:

"Dr. H L. E. Johnson, 1400 L street N. W., Washington, D. C., has been elected chairman of the Special Committee on Transportation. All communications relative to rates, reservation in the special trains, etc., should be addressed to him.

"A rate of one fare for the round trip has been secured between St. Louis, New Orleans and other trans-Mississippi points and the City of Mexico. It is confidently expected that this rate will be extended over the entire territory of the United States. Arrangements are in progress for a splendidly equipped special train of sleeping and observation cars, with first-class dining-car service. Dr. Johnson will presently be in a position to announce a rate, which will include railroad fare, sleeping and dining-car service both ways and in the city of Mexico, and covering the expense of various side trips to the most historic points in the Republic."

President Lutz has appointed the following members of the National Association of Railway Surgeons as delegates to the Pan-American Medical Congress:

Dr. Henry F. Hoyt, Chief Surgeon Great Northern R. R., St. Paul, Minn.; Dr. C. W. P. Brock, Chief Surgeon C. & O. R R., Richmond, Va.; Dr. W. D. Middleton, Chief Surgeon C. R. I. & P. R. R., Davenport, Ia.; Dr. G. W. Hogeboom, Chief Surgeon A. T. & S. F. R. R., Topeka, Kas.; Dr. E. F. Yancey, Chief Surgeon M. K. & T. R. R., Sedalia, Mo.; Dr. J. B. Murphy, Chief Surgeon Wisconsin Central R. R., 911 Venetian Building, Chicago, Ill.; Dr. Truman W. Miller, Chief Surgeon Grand Trunk R. R., 612 Reliance Building, Chicago, Ill.; Dr. A. C. Scott, Chief Surgeon G. C. & S. F. R. R., Temple, Texas; Dr. F. A. Stillings, Chief Surgeon Southern Division B. & M. R. R., Concord, N. H.; Dr. J. W. Tope, Surgeon C. & N.-W. R. R., 30 Pleasant street, Oak Park, Ill.; Dr. James Thorburn, Consulting Surgeon Grand Trunk R. R., Toronto, Canada; Dr. J. H. Williams, Chief Surgeon M. D. & S. R. R., Macon, Ga.; Dr. J. N. Warren, Chief Surgeon S. C. & N. R. R., Sioux City, Ia.; Dr. W. R. Tipton, Consulting Surgeon A. T. & S. F. R. R., Las Vegas, N. M.; Dr. D. F. Stuart, Chief Surgeon H. & T. C. R. R, Houston, Tex.; Dr. G. P. Conn, Chief Surgeon C. & M. R. R., Concord, N. H.; Dr. H. W. Morehouse, Chief Surgeon Wabash, Danville, Ill.; Dr. W. B. Outten, Chief Surgeon Missouri Pacific Ry. Co., St. Louis, Mo.; Dr. W. A. McCandless, Chief Surgeon Terminal Railway Association, St. Louis, Mo.; Dr. E. R. Lewis, Kansas City, Mo.; Dr. C. D. Wescott, oculist for the C. M. & St. P. R. R., Chicago, Ill.; Dr. C. A. Wheaton, Chief Surgeon St. P. & D. R. R., St. Paul, Minn.; Dr. Warren W. Weaver, Surgeon B. & O. R. R., 6105 Woodland avenue, Philadelphia, Pa.; Dr. E. N. Allen, Chief Surgeon C. & O. R. R., South McAllister, I. T.; Dr. A. I. Bouffleur, Surgeon C. M. & St. P. R. R., 738 Washington boulevard, Chicago, Ill.; Dr. W. R. Hamilton, Vice-President N. A. R. S., Pittsburg, Pa.

Annual Convention of the Medical and Surgical Staff of the Erie Railway Company.

The annual meeting of the Association of Erie Railway Surgeons was held at the Kent House, Lakewood, N. Y., Sept. 21, 1896. An accident occurred at the opening of the session which interfered with the pleasure of the entire gathering. Dr. John L. Eddy of Olean, the president of the association, an aged and well-known surgeon, stepped into an open elevator shaft and fell to the bottom, a distance of eight feet. He was at once removed to his room at the Kent House, where it was found that he had sustained a deep cut across the forehead, a badly sprained ankle and a severely bruised hip.

On account of this accident to the president, the vice-president, Dr. Webb J. Kelly of Galion, O., presided. Dr. S. Birdsall of Susquehanna, Pa., presented a paper on "Symes Ankle-joint Amputations," and the discussion which followed was joined in by Drs. C. S. Parkhill of Hornellsville, George H. Hall of Binghamton, J. A. Ritchey of Oil City and T. B. Lashells of Meadville.

Dr. F. W. Thomas of Marion, O., gave an address on "Injuries of the Throat." Dr. C. C. Kinnaman of Ashland, O., presented a paper on "Symmetrical Gangrene," and Dr. C. M. Daniels of Buffalo, chief surgeon of the Erie Railway, told about his relief and hospital organization scheme, as intended to be adopted by the company.

The afternoon programme consisted of papers on "Traumatic Spinal Neurosis," by Dr. N. R.

Harnden of Waverly, N. Y.; "Painful Stumps After Amputation," by Dr. C. B. Kibler of Corry, Pa.; "Railway Shock," by Floyd S. Crego of Buffalo; "Clinical Review of Cases the Past Year," by Dr. Thomas Manley of New York.

The session was attended by a larger number of surgeons than any former meeting in the history of the association.

The annual election of officers resulted as follows: President, Dr. Webb J. Kelly, Galion, O.; vice-president, Dr. F. W. Thomas, Marion, O.; secretary and treasurer, Dr. W. W. Appley, Cohocton; executive committee, Dr. C. M. Daniels, Buffalo; Dr. C. S. Parkhill, Hornellsville; Dr. L. H. Leyman, Huntington, Ind. The executive committee will select the next place of meeting, probably in New York.

(415) Surgery of the Spine.

Parona (Il Policlinico, May 15, 1896), reports four cases of spinal affection. The first was one of long-continued dorsal neuralgia affecting the seventh and eighth dorsal nerves on the left side. None of the usual remedies did any good, but injections of KI deep into the situation of the nerve roots cured permanently after eight injections. Fifteen grains were given on alternate days, and improvement was noticed after the third injection. There was some reason to suppose that the case was rheumatic. The second case was one of persistent, troublesome neuralgia affecting the seventh and eighth pair of dorsal nerves, and probably due to a fractured spinal process (eighth dorsal) twenty years before. The injured spine was exposed; no bony pressure was found. The author therefore thoroughly stretched the nerves near their exit from the vertebra foramen, and so freed them from the old thickening. The result was permanent and speedy cure of the neuralgia. The two other cases were each tuberculous in nature, and consisted of caries of the transverse process and body of the third and fourth dorsal vertebra, accompanied by mediastinal abscess. The abscess cavity was freely exposed and drained from behind, and the patients recovered locally, but one died a few months after from pulmonary phthisis (of which there was no sign at the time of operation), and the other showed signs of phthisis. Both patients were adults, and there was no deformity of the spine. Mediastinal abscess was suspected, from the fact that when the external abscess was completely aspirated it almost immediatly filled again, the quantity of fluid extracted being out of proportion to the volume of the visible swelling, and the abundance and flow of the discharge through the fistula being manifestly affected by the coughing of the patient.—British Medical Journal.

Notes, News and Personals.

The death is reported of Dr. W. G. Kingsbury of Boerne, Texas. The doctor was widely known in his own state as a good physician and public-spirited citizen. He was formerly connected with the Southern Pacific Railway and organized in England a colony which settled in a place named for him on the line of that road.

We regret to record that Dr. John L. Eddy of Olean, N. Y., ex-president of the Association of Erie Railway Surgeons, and one of the vice-presidents of the National Association of Railway Surgeons, recently sustained severe and painful, but fortunately not serious, injuries, by falling a distance of eight feet into an open elevator shaft. We feel sure that the doctor has the sympathy of all his many friends among the railway surgeons.

Dr. James Edgar Chancellor died Sept. 11, 1896, at his residence, University place, University of Virginia, at the age of seventy-one.

Dr. Chancellor was the son of the late George Chancellor, was born at Chancellorsville, and was a brother of the late Lorman Chancellor of Baltimore, and cousin of Dr. Chancellor, consul at Havre, France. He was educated at the University of Virginia and at Jefferson Medical College, Philadelphia, for his profession, the practice of which he began at Chancellorsville. The war coming on, he was commissioned first assistant surgeon and then surgeon in the Confederate army, and assigned to duty at the general hospital at Charlottesville. He was made demonstrator of anatomy in the University of Virginia, where he remained until his health imperatively demanded his retirement. He became president of the Medical Society of Virginia, and during his term the state board of medical examiners of Virginia was organized, of which he became a member in 1890, and in which office he continued till his death. For twenty years he has been a member of the American Medical Association and of the American Public Health Association.

The first wife was Miss Josephine Anderson of Spottsylvania county, who bore him six children—Dr. E. A. Chancellor of St. Louis; Alexander Clarendon Chancellor of Columbus, Ga.; Thomas Sebastian Chancellor of New Orleans; Samuel G. Chancellor of the University of Virginia, and Josephine Chancellor, now deceased. His second wife, Mrs. Gabriella Mays Chancellor, survives him.

John Eric Erichsen, F. R. S., LL.D., Hon. M. Ch. and Hon. F. R. C. S., died at Folkestone, Eng., Sept. 23, 1896, from apoplexy.

He was born July 19, 1818, and educated

at the Mansion House, Hammersmith, and at University College, London. He was a Fellow and ex-president of the Royal College of Surgeons, a Fellow of the Royal Society, of the Royal Academy of Medicine of Belgium, the Imperial Society of Physicans of Vienna, the Academia di Guereti (Rome), the University of New York, and the American Surgical Association, and a member of various other learned and scientific institutions, home and foreign.

At the time of his death Mr. Erichsen was Emeritus Professor of Surgery and consulting surgeon to University Hospital, and to many other medical charities. He had been president of the Royal College of Surgeons of England, of the Royal Medical and Chirurgical Society, and of the Surgical Section of the Great International Medical Congress of 1881. He was appointed secretary to the Physiological Section of the British Association for the Advancement of Science in 1844; was member of the Royal Commission on Vivisection in 1875; was surgeon-extraordinary to the queen, and had been president of University College, London, since 1887.

Mr. Erichsen was the author of many works and essays on physiology and surgery. In compliance with an influential requisition, he contested, but unsuccessfully, the representation of the universities of Edinburgh and St. Andrew's at the general election of 1885.

It is with peculiar sadness that we announce the death of Mrs. Fannie Peckham Thorne, wife of our distinguished ex-president, Dr. S. S. Thorne of Toledo, O.

She died at her residence, 502 Lagrange street, Sunday morning, October 11, at 1:30 o'clock. Mrs. Thorne had been ill for some time and her death was not altogether unexpected. She complained of a sudden sickness during the afternoon and grew rapidly worse as the night wore on, and when the end finally came she passed away in the midst of her family. She was in her 61st year and had been a resident of Toledo for 36 years. She was married to Dr. Thorne at Lockport, N. Y., in 1856 and four years after removed to Toledo, where her husband entered upon the practice of medicine.

She was born in Utica, N. Y., in 1835, and was the daughter of Dr. Peleg B. Peckham. She was the mother of the late Dr. George Thorne, and three other children, Annie, Laura and Alice, all living.

Mrs. Thorne was well known to many members of the National Association of Railway Surgeons, who will join us in extending to Dr. Thorne and his family sincerest sympathy.

Take physic, pomp; expose thyself to feel what wretches feel.—Shakespeare.

Extracts and Abstracts.

Some Recent Cases of Minor Surgery.*

By F. B. Tibbals, M. D., Detroit, Mich.

I am well aware that the only popular surgery of the present decade is gynecological, but as this specialty will not accommodate all of us, the adult female comprising only about twenty-five per cent of the total population, there must of necessity be general practitioners and general surgeons.

The general practitioner of surgical bent, however, occasionally finds surgical cases in which lesions exist outside of the pelvis and abdomen, some of them trivial in character as regards hazard of life, yet all demanding treatment along good surgical lines. I wish to report to-night some cases of this kind—minor surgery—which have come under my care, mostly within the last two years.

Some of these cases seem possibly too trivial to report, but success in little things often pleases the patient, and occasionally lives are at stake as well. For convenience in discussion I will classify my cases under three heads and for brevity's sake avoid all unnecessary detail.

I. Abscesses and poisoned wounds.

Retropharyngeal abscess resulting fatally.—The patient was a woman of uncertain antecedents. When first seen she exhibited a temperature of 105 degrees Fahrenheit, and was suffering from dysphagia, vomiting and purging. Examination of the throat disclosed no abnormal condition except diffuse redness of the pharynx. The tongue soon swelled so that further examination was impossible, and the patient died suddenly two days later, suffocated by the bursting of the large abscess disclosed postmortem.

Retrorectal abscess, absolutely painless, rupturing without any premonitory symptoms into the rectum four inches above the anus.—I could pass a probe some six inches into the fistulous tract leading off from the rectum posteriorly, and was thus able to wash out the abscess cavity with hydrogen peroxide and other antiseptics, throwing in afterward, through a powder blower, boric acid plus a little iodoform. The cavity closed down after three months' treatment, but the fistulous track, kept open by the involuntary muscular action, continues at times to discharge a little pus aggravated always by constipation. As this patient has since been assured by several Detroit physicians of supposed intelligence that he never had such an abscess, but, on the

*Read before the Detroit Medical and Library Association and published in a recent issue of the Physician and Surgeon.

contrary, catarrh of the stomach with intestinal sequellæ, I take this opportunity of reporting the case at this length.

Superficial abscesses in the cervical and axillary regions are generally due to breaking down of lymphatic glandular tissue and usually heal promptly after free early incision, curettage and packing for drainage. I have a record of a dozen such cases which I will not weary you in detailing. Oftentimes suppuration beginning in this way, if not promptly treated, is carried by metastasis to other glands adjacent or remote, and the case may terminate in general pyemia or general tuberculosis. A striking illustration of this fact has been for nearly a year under my care, the patient being a girl of about twenty without hereditary taint. The trouble began some three years ago in one or two superficial glands of the neck, which were not incised. In a few months all the glands of one side of the neck, both superficial and deep, became infected, and a radical operation then undertaken failed to extirpate more than a part of the diseased tissue. When she came under my care last summer one side of the neck and part of the face was a mass of suppurating fistulous tracts, and there were also four open unhealthy sores elsewhere as sequellæ of abscesses allowed to rupture spontaneously. Within a short time I opened and drained ten other abscesses, all but one subcutaneous. Every effort was made by tonic supportive treatment internally, and stimulating antiseptics locally, to build up the patient and antagonize the autoinfection with, for some months, gratifying success. No new abscesses formed, many of the open sores healed kindly and the patient gained in weight and strength. But on the opening of winter suppuration began anew, attended by emaciation, loss of strength, afternoon temperature and night sweats, and the case is now persistently retrograding. In all probability this poor girl's life might have been saved by timely surgical treatment at the inception.

The same reasoning applies to suppurating nonvenereal glands of the groin. I have four cases recorded—two of which were incised, curetted and packed as soon as pus began to form, and two of which came into my hands at a later stage. The first two healed promptly, while the others dragged a weary course of several months.

Abscesses of this character occurring usually in individuals of the strumous type are frequently obscurely tubercular, and the prompt removal of the local nidus will often prevent secondary systemic infection. Another argument for early surgical interference in all cases in which pus can be diagnosed or even suspected is the prevention of deformity and loss of function. A housemaid came to me a year ago, presenting a useless hand as a result of a neglected felon on one of the fingers. The wrist was absolutely stiff, the fingers nearly so. I broke up the adhesions by considerable force under anæsthesia with daily passive motion following, repeating this forcible manipulation under anæsthesia every ten days for three months, at which time I had obtained only slight wrist movement, but perfect use of the fingers.

From quite a number of poisoned wounds I select three of the hand in which the cut was made by glass. All were seen immediately after the injury, carefully cleaned, fragments of glass searched for, and antiseptic dressing applied. I do not know whether the irritant is traumatic, chemical or bacteriological, but in my experience wounds of this kind are very slow in healing. Even when there is no pus formation the edges become inflamed and infiltrated, union by first intention being the exception.

II. INJURIES TO JOINTS.

Compound dislocation of the Elbow.—This patient was a locomotive fireman, injured fifty miles outside the city. While oiling his engine the throttle flew open and his arm was caught in the driving wheel, a compound dislocation of radius and ulna backward resulting. The dislocation was reduced, wound dressed, arm put in a rectangular splint, and the patient sent to his home in Detroit. I did not disturb the dressings until thirty-six hours after injury, when he had a short chill, the temperature rapidly jumping to 103 degrees Fahrenheit. I found the arm doughy, swollen and inflamed to the shoulder and the elbow joint full of pus. Free incisions were made and drainage tubes introduced in several directions through and about the joint and free irrigation used two or three times daily of hydrogen peroxide, full strength. In forty-eight hours he was out of danger. Passive motion was begun early and to-day the arm is as good as ever.

Two cases of separation of the lower epiphysis of the humerus treated by angular anterior and posterior splints and early passive motion.—The diagnosis between this condition and fracture above the condyles is sometimes difficult, but in children epiphyseal separation is the more common.

I had the pleasure recently of examining a fractured elbow-joint, the result of great indirect violence in a girl of sixteen. There had been a fracture across both condyles, the fragment being split vertically with dislocation of both radius and ulna. The surgeon attending had found it impossible to maintain everything in normal position, and the result after two and one-half months was ankylosis in the true joint, with a good false joint through nonunion of the fracture. I advised, and I think rightly, noninterference, as the arm is free from pain, and can be perfectly flexed and ex-

tended, though with somewhat impaired pronation and supination.

The Knee.—In speaking of the knee I shall confine myself to sprains, of which I have recorded six cases, two of them being physicians. One chronic case was much benefited by four months' use of a plaster cast. In another (a physician) the injury to the joint structures had been very severe, and a month after injury he was unable either to step upon the limb or to extend it within an angle of thirty degrees of straight. I put him in bed with a weight and pulley attached to leg. In five days the leg was straight and protected by a snugly fitting cast he resumed practice. One week later the cast was removed at night and a month later entirely discarded. My method of treating an injury of this kind, if seen early, is complete rest in bed, evaporating anodyne lotions for pain and firm compression by means of a Martin's rubber bandage. When the swelling has been thus reduced a well-fitting cast is applied and the patient allowed to get up, due care being taken that resumption of the use of the leg is gradual.

The Ankle.—The same treatment applies, in the main, to sprains of the ankle-joint. I keep the patient quiet a few days until the pain is lessened, and swelling reduced by Martin's bandage; then apply firm compression from the toes well up the leg by strapping with adhesive plaster, and encourage the patient to use the joint. The five cases which I have treated in this way gave uniformly prompt and gratifying results. The method of strapping is as follows. First protect the skin by a layer of gauze, adding cotton over the prominent bony points. Then begin at the toes, using strips one to one and one-half inches wide and fifteen to eighteen inches long, and cover the whole foot to the lower third of the leg with overlapping strips firmly applied. In this way, better than any other, we get firm support, at the same time allowing limited use of the joint.

III. VARICOSE ULCERS.

The same method of strapping I have found useful in seven cases of varicose ulcer, applicable when the ulcer can be kept dry enough not to require too frequent dressing. The successful treatment of varicose ulcer requires three things—time, patience and rest of the affected leg. The wide range of expedients recommended proves the obstinacy of the condition. I think rest and firm support in aid of the return circulation are primary factors to which local treatment is secondary. Two of my cases have been unsatisfactory, because I could not enforce the most essential feature—rest. One seen only in consultation drifted away from the attending physician. The other is now progressing nicely, with rest, in a hospital. The local treatment which has seemed to me most beneficial is scarification of the edges, or occasional stimulation with silver nitrate stick applied lightly also to the ulcer, cleanliness, dressing as infrequently as possible with iodoform or other antiseptic powder, meanwhile keeping the limb elevated and well bandaged. In two of these cases the ulcers were very large, three inches square at least, but were completely healed in less than six months. In one case I elicited a syphilitic history and by giving large doses of potassium iodide and indifferent local treatment soon healed two varicose sores which had resisted four years of treatment at the hands of a fellow practitioner. I trust the wide range of my paper will offer free scope for discussion.

Traumatic Rupture of the Spleen.

At a recent meeting of the Society of Alumni of Bellevue Hospital, Dr. Samuel Pierson of Stamford presented a report of such a case.

The patient, a boy of ten years, had been seen in consultation with Dr. Treadway on the morning of January 16, 1896. While coasting on the previous evening, the boy had been thrown from his sled against a post and had struck upon his head and shoulder, and had then fallen on his side. When seen by his physican a few minutes later, he had been pulseless, but conscious, and had located his worst pain under the left axilla in a line with the nipple. After careful examination no evidence of fracture of the ribs or of any other injury could be discovered. During the night the boy had vomited almost constantly. When first seen by Dr. Pierson in the morning he had been lying with his knees drawn up, the face pinched, the abdomen very much distended and exquisitely tender. Pulse, 145; temperature, 103.5 degrees; respiration, 40. It was apparent that the boy had sustained some serious abdominal injury, and his removal to the hospital for possible operation had been advised. On arrival there he had been given an enema of warm water, which had relieved the distention and tenderness to a considerable degree. Temperature, 102.5 degrees; pulse, 130; respiration, 30. Had the boy been seen for the first time in this condition he would probably not have been operated upon, but having fortunately been under observation from the first, there could be no doubt that he had sustained a serious injury. At six o'clock, twenty hours after the injury had been received, an operation had been done, with the assistance of Dr. Parker Syms of New York (to whose valuable advice the success of the operation was largely due), Dr. L. R. Hurlbutt, Dr. A. M. Hurlbutt, Dr. Sherrill and Dr. Gibbs. A small incision had been made in the median line below the umbilicus.

When the peritonæum had been reached, liquid blood had been plainly seen underneath, and on cutting through the membrane the blood had gushed forth in large quantity. The opening had been enlarged, and the cavity deluged with a saline solution. Besides the liquid blood a large quantity of clots had been washed out from among the coils of intestines, which had been carefully searched for rupture. As no rupture had been found, and as the fresh blood had seemed to come from the upper part of the abdomen, the incision had been enlarged upward almost to the ensiform cartilage. The liver had been first examined carefully, with a negative result. More clots and liquid blood had been found covering the intestines on the left side under the border of the ribs. After these had been washed away, the ribs had been held up by an assistant, and, on depressing the intestines, the bleeding point had been plainly seen in a transverse laceration of the hilum of the spleen. Fresh blood had been oozing from the rent. As it had been impossible, owing to the depth of the cavity and the nature of the tissue, to ligate the bleeding point, a long piece of iodoform gauze had been packed tightly in the rent, and brought out of the upper end of the abdominal wound. The abdominal cavity had been filled with saline solution and the wound closed with silkworm-gut sutures: Profound shock had followed the operation, and three high saline enemata had been given during the night with very happy results. At midnight the pulse had been 148, temperature 102.5 degrees, respiration 26. Oozing had been free during the night, but the general condition had improved steadily. On January 17, a. m., temperature, 102 degrees; pulse, 130; respiration, 28; p. m., temperature, 101 degrees; pulse, 120. He had passed a fair day, and had retained some milk and limewater. The bowels had been moved freely by calomel on the 18th. For the next three days the temperature had ranged from 101 degrees to 103 degrees; and the pulse from 96 to 120.

On January 21, five days after the operation, the wound had been dressed under chloroform. The gauze had been removed with some difficulty, and replaced with a much smaller packing. There had been no hemorrhage. Notwithstanding the absence of suppuration at the first dressing, for the next four days the temperature and pulse had still ranged high. On January 25 several stitch abscesses had been opened, and the cause of the disturbance was thought to have been reached. The next day the temperature had been higher than ever, and a careful examination of the chest had shown fluid in the lower part, and a beginning broncho-pneumonia in the middle lobe of the left lung. The discharge from the wound had nearly ceased, and, except for the stitch abscesses, the wound had been entirely healed. For the next five days the temperature had ranged from 100 degrees to 104.5 degrees; pulse from 100 to 130; respiration from 28 to 45. The pneumonia had then begun to resolve, but the fluid had increased, and there had been great tenderness and a fulness over the seat of the laceration in the spleen. The wound had been discharging a moderate amount of serous fluid daily. Fearing that the fluid in the chest might have become purulent, on February 2 an aspirating needle had been inserted and a drachm of pure blood withdrawn. This would, of course, not account for the temperature, and a purulent collection at the seat of the original injury had been feared. At three o'clock of the same day about a pint of thin, chocolate-colored, absolutely non-odorous fluid had been discharged from the original opening. The temperature had immediately dropped to normal, where it had remained until February 13, when it had again reached 100 degrees without any apparent cause. From this time convalescence had been uneventful, by March 1 the fluid in the chest had been entirely absorbed, and, with the exception of a small sinus, the boy had been entirely well.

So far as he had been able to find, there was no recorded history of such an injury to the spleen, treated by packing only for the stoppage of hemorrhage. In this case the child's condition had been so bad that no time could be taken in attempts at suturing the rent or in removing the organ. The hæmothorax had evidently been due to the original injury. That the injury would have been fatal without operation, even had the bleeding ceased, seemed hardly open to question, owing to the very large quantity of blood and clots in the abdominal cavity.

Dr. Robert T. Morris said that, assuming that the patient's bad condition had been due to loss of blood, it would seem to him that the case might have been easily and successfully treated by first giving a large intravenous saline infusion, and then extirpating the spleen, but one must know particulars of any given case.

Dr. J. Blair Gibbs said that when the case had been first seen, the patient's condition had been very serious, and the symptoms only those of grave shock. On making an exploratory incision the whole abdominal cavity had been found filled with clots and bloody serum. The removal of this large quantity of blood clot had necessarily consumed considerable time, and when this had been accomplished, the boy's condition had been extremely bad. The spleen had been found to be covered with very adherent blood clots, and with a very well-defined laceration on its anterior border.

The hemorrhage had been quickly stopped bv packing with iodoform gauze, and therefore it had been assumed that this simple measure would give the patient the best possible chance for his life. The spleen might have been removed, of course, but it would have in all probability greatly increased the risk of the operation.

Dr. J. F. Erdmann said that in this connection he desired to exhibit a spleen in which there was a gunshot wound. He had intended to remove the spleen in this case, but finding the man's condition very bad, owing to five perforations of the ileum and jejunum and one of the omentum, he had finally decided to simply pack the wound with gauze. This had been done, and with the very best results, but six days after the operation the man had died from acute uræmia.

Dr. E. Le Fevre asked if the fluid in the pleural cavity was thought to have been due to the original injury.

The president said that he had only seen the patient once after the operation, the next day, and that then there had been no indication of such a condition. His own impression was that the fluid had been retained blood, of the nature of a subphrenic abscess. He would doubt very much the wisdom of treating most cases of hemorrhage from the spleen by this method, although it was undoubtedly a very proper procedure in this particular instance. In most cases of rupture of the spleen there was some penetrating wound of the abdomen, or else the spleen had been previously diseased—e. g., from malarial infection. In one case which he recalled there had been a similar rent in such a diseased spleen. The spleen had been sutured, but the patient had died of concealed hemorrhage, due to a rent which had been overlooked in another portion of the organ. As a rule, the spleen ruptured on the posterior surface from the doubling up of the organ.—New York Medical Journal.

Sudden Acute Abdominal Pain; Its Significance.

By Byron Robinson, B. S., M. D., Chicago,
Professor of Gynecology in Post-Graduate School.

Abdominal surgery is no longer a pioneer work. It is the result of the accumulated experience of the past fifty years. Its success is based on well tried processes. It is a jealous field, filled with battles lost and won, dotted here and there with sad regrets, chagrin from unavoidable mistakes, but often brightened by the light of success. A master hand in abdominal surgery is a hard-earned reputation. However, the accumulative experience of fifty years has still left obscure points in abdominal surgery which the genius of Lawson Tait attempted to set at rest by the exploratory and confirmatory incision.

During the past ten years I have been particularly interested in gynecology and abdominal surgery, and all along these years has risen the question of abdominal pain and its significance. To interpret abdominal pain requires the best skill of the finest heads.

Location.—How far can we diagnose abdominal pain by its locality? Only to a limited degree. Associated circumstances must aid in the diagnosis. There are three common localities of acute abdominal pain, or peritonitis, viz., pelvic, ceco-appendicular and that of the gall-bladder region, and as probability is the rule of life, it is well to diagnose acute abdominal pain as a disturbance in one of these three localities of the peritoneum.

Acute abdominal pain in general is referred to the navel—in other words, to the region immediately over the solar plexus or abdominal brain. Acute abdominal pain is due to a disturbance of the peritoneum, owing to a lesion of an adjacent viscus; but since the peritoneal pain can arise from many organs and from several points of the same organ, it demands the most experienced diagnostic acumen and the most mature judgment to interpret the significance of the trouble. No one can decide what kind of wood lies under a tablecloth. I have repeatedly observed in appendicitis that patients say the acute pain, especially in the beginning, is over the whole middle of the abdomen (solar plexus). This may be due to excessive and violent peristalsis of the small intestines. As regards locating the pain at any point of the small intestines, it cannot be done; first, because the loops of the intestine have no distinct order as to locality; second, the patient cannot discriminate a point of pain at any given point—perhaps from lack of practical experience. With few exceptions to locate the seat of trouble in acute abdominal pain, we call to our aid the pain elicited by pressure. Pressing the abdominal walls produces a distinct localized tenderness or pain which suggests localized pathology. Again, rigidity or tension of the abdominal wall is suggestive of a pathologic locality. This symptom is purely reflex, due to irritation passing from the involved viscera to the spinal cord, whence its irritation is transmitted to the periphery of the lower intercostal nerves which control the abdominal muscles over the seat of pain. Dashing cold water on the belly will produce similar protective muscular rigidity. Hence, in general, the location of disease in the abdomen from the patient's feeling of sudden acute pain is quite indefinite. But local tenderness and local pain on pressure aid very much. Localized rigidity of the abdominal wall is suggestive that such tension is protecting the seat of disease from motion, further

bacterial or fecal invasion. In short, the rigid muscles are putting the pathologic parts to rest.

Vomiting is a general characteristic of sudden acute abdominal pain. In sudden acute abdominal pain, from visceral lesion, nature makes profound effort to manifest its distress, but to diagnose the seat of pathology and nature from the localization of the pain requires much reading between the lines from experience and judgment.

Again, a vast difference arises between sudden acute abdominal pain and the abdominal pain which comes on slowly. Much depends on the stage of the disease in which the physician first visits the patient.

The signification of sudden acute abdominal pain may be realized better by a short consideration of some of the principal conditions which occasion it.

The first class of sudden acute abdominal pain chiefly arises from the digestive tract. The second class arises from the genito-urinary.

1. In the category of the digestive tract, producing sudden acute abdominal pain, we place interstitial obstruction from (a) strangulation by bands and through apertures; (b) invagination; (c) volvulus, and (d) perforation. The mode of onset in all of these is sudden and violent and nearly always accompanied by vomiting.

Strangulation by bands and through apertures constitutes one-third of all interstitial obstructions. If the bowel loops slip through an inguinal or femoral aperture, digital examination will detect the cause of the sudden, acute abdominal pain. Obturator and sacro-sciatic hernia are seldom diagnosed, so that practically they would come under internal strangulation by peritoneal bands. Sex does not aid in diagnosis, for males and females about even up in peritonitis during life, and hence will possess about the same amount of peritonitic bands to strangulate bowel loops.

A history of previous peritonitis tells the story of strangulation by bands. Vomiting is violent, pain from peristalsis is periodic and general over the abdomen. The pain is not due to stoppage of the fecal current, but to reflex irritation of the bowel at the seat of obstruction. Temperature is not conspicuous and the pulse is not much changed. Tympanitis arises in exact proportion to the peristalsis of the bowel wall above the seat of obstruction. At first the pain is violent, but it subsides with the progress of the case, becoming more continuous and generally diffused. If the patient be quiet, the pain is so slight that it deceives the most elect. No stool, no gas per rectum, no detectable swelling at any hernial aperture with continuous abdominal pain and vomiting demand surgical notice. The temperature and pulse are not reliable. Strangulation by bands will generally give no tender location on pressure and no detectable swelling, and in fact, I have watched cases with the abdomen quite soft and pliable with no possible physical point of diagnostic value, not even tympanitis. In one case the pain was at first severe, general, and almost subsided the day before the operation, yet fifteen feet of gut was as red as a sunset. The sudden, acute abdominal pain is not due to the constricting band, but to reflex irritation transmitted to the abdominal brain where reorganization occurs, whence it is emitted to the whole digestive tract, inducing violent, disordered and wild peristalsis (colic).

Acute, sudden abdominal pain, due to a constricting peritoneal band, is one of the most obscure matters to interpret. To explore the abdomen in the proper time for such cause requires a wise diagnostician and a bold surgeon. The matters to bear in mind in strangulation by bands are the acute, sudden abdominal pain with a violent onset, vomiting, and the distinct colicky, peristaltic, periodic character of the suffering, not forgetting a previous history of peritonitis. However, the sudden, acute abdominal pain arising from strangulation of a loop of bowel by peritonitic bands is difficult to interpret and seldom diagnosed. It may be asserted that when a patient is suffering from some grave disease, manifest only by sudden, acute abdominal pain, the nature of which cannot be interpreted, an early exploratory laparotomy is justifiable and demanded. Such obscure cases require an experienced and skilled surgeon in abdominal work to meet any emergency. I remember very distinctly the case of a man about forty who gave consent to my colleague, a general practitioner, who was entirely untrained by experience or observation in abdominal surgery. The doctor told me he opened the abdomen and found a band stretching tightly across the ascending colon. But he said "the colon was black, and I did not know what to with it, so I closed the abdomen." It is needless to say that the man made a prompt, fatal exit. But most cases die undiagnosed. The danger of strangulation by bands is gangrene and perforation.

Invagination constitutes about one-third of all interstitial obstructions, and the sudden, acute abdominal pain arising from this cause is more easily interpreted. Age signifies much in this case, for one-fourth of all invagination occurs before the end of the first year of life, and one-half before the end of ten years. Invagination is a disease of childhood. Its mode of onset is sudden and often violent. From some twenty-five experiments in invaginating the bowel of the dog, I am sure the pain is periodic at first. The griping, colicky peristalsis is rhythmic, depending on ir-

ritation. At stated times the dog suddenly spreads wide his four feet and arches his back, appearing in severe distress, then gradually recovers his natural attitude. In invagination blood occurs in the stool in 80 per cent. of cases (especially children), and the vomiting is not violent nor even always conspicuous, for the bowel is only partially occluded. Seventy per cent of invagination occurs at the ileo-cecal apparatus—that landmark in man's clinical history—15 per cent in the small intestines, and 15 per cent in the large bowel. Invagination manifests abdominal pain similar to a long enterolith in the bowel which in turning leaves small spaces at its side for the passage of gas and some liquid stool. I have, unfortunately, watched a case of enterolith day after day, not being able to interpret the abdominal pain or to diagnose the case until gangrene of the bowel occurred at the seat of the enterolith, when nature asserted sufficient manifestation to explore the abdomen, but with fatal result. The most skilled of abdominal surgeons repeatedly examined this case, but could not interpret the acute abdominal pain which came on suddenly, though as the days glided on it quietly subsided. The patient was a physician, but could not localize any abdominal pain; it was diffuse. Temperature was about 99½ degrees and 100 degrees F., and the pulse was 85 to 95 almost the whole week of illness. The abdomen was generally soft and not tympanitic. Very seldom can an abdominal tumor be felt in the bowel invagination. Shock in young children is quite conspicuous, yet I personally know of two autopsies in infants who were attended in life by three of the most skilled Chicago abdominal surgeons, yet in neither case was the diagnosis of invagination made, which the post-mortems revealed as the cause of death. A skilled and experienced physician, such as was the late Dr. Jaggard, took an eight-months infant and stripped off the clothing to be more thorough in examination, and yet, after all his diagnostic skill, failed to locate disease in the bowels. The child was very pale, cried a little, and died thirty hours after the attack. The autopsy revealed ileo-cecal invagination.

Sudden, acute abdominal pain in a child may with high probability be interpreted as invagination, especially if one can detect the periodic, peristaltic character, its colicky nature. Blood following in the stool is almost pathognomonic. A tumor will rarely be found, and pressure on it will not generally elicit tenderness. It is not at all likely that the patient can locate the seat of the disease from the pain. Tympanitis and vomiting are not conspicuous, and the temperature and pulse are unreliable. The danger of invagination is sloughing of the apex or neck and consequent perforation. Invagination presenting at the anus interprets easily the cause of the pain. Volvulus is so rare that it constitutes about one-fourth of all interstitial obstructions, and occurs about four times as often in men as women. As in invagination so in volvulus, I was always compelled to suture them in position in a dog. But I never succeeded in establishing a permanent volvulus in the dog. Volvulus is characterized by tympanitis, and it is said by severe periodic pain. Volvulus occurs at the sigmoid in 60 per cent of the cases; at the ileo-cecal valve in 30 per cent, and in the small intestines in 10 per cent. I have seen partial, but never complete, volvulus in man. Senn operated successfully on a man, on the eighth day, for sigmoid volvulus. The man had enormous tympanitis; his pain is not described as severe, but no doubt the suffering is severe.

At first the pain is periodic, but as time advances it becomes more constant, with now and then exacerbations. Vomiting, though not conspicuous, must arise more or less from trauma to the peritoneum. Perhaps the sudden pain, chronic constipation and rapid rise of tympanitis would aid in interpreting volvulus, but seldom can one diagnose such a disease, pain no doubt would be referred to the abdominal brain. Most clinicians note tympanitis as a conspicuous feature of volvulus.

In perforation it is very difficult to interpret the sudden abdominal pain. Associated circumstances would aid. In typhoid fever one would naturally suspect perforation if sudden, acute abdominal pain arose, and my colleague, Dr. Van Hook, successfully operated on a typhoid perforation diagnosed by his medical friend. One might think if he was called to a young woman with sudden, acute abdominal pain that it was a round, perforating ulcer of the stomach, after excluding pelvic and appendicular disease. But the sudden, acute abdominal pain of perforation is so vague and indefinite that only an exploratory incision would interpret it.

The sudden, acute abdominal pain from appendicitis (perforation) is more apt to be diagnosed. Now probability is the rule of life, and when one is called to a boy or man up to 35 with sudden, acute abdominal pain, it is likely appendicitis. The pain of appendicitis is at first sudden and generally diffuse, and the sudden pain in appendicitis is, in my experience, a characteristic and conspicuous feature of it. The sudden, acute pain in appendicitis is doubtless due to violent appendicular peristalsis (colic) or the rupture allowing the bowel contents to come in contact with the peritoneum, and also inducing violent, irregular peristalsis of the adjacent bowel loops. Rigidity of the abdominal muscles of the seat of pathology in appendicitis is a great aid to interpreting the pain. The

muscular rigidity is protective and due to the transmission of the visceral irritation to the spinal cord which is reflected to the abdominal muscles. There is a nice balance between the peripheral visceral nerves and the peripheral nerves in the abdominal muscles. Local tenderness and local rigidity of the abdominal muscles is a great aid in signification of the sudden, acute pain in appendicitis. It might be well to suggest that the position of the appendix is extremely variable. In 350 autopsies I noted the appendix located all the way from the under surface of the liver to the floor of the pelvis, and also many times where there was more or less of a mesenterium commune, the cecum turned toward the vertebral column, and the appendix is then liable to lie among the small intestines—the dangerous ground of peritonitis. It is likely that the pain in appendicitis depends on the seat of the disease, i. e., the mucous membrane has become ulcerated, inducing appendicular colic (peristalsis), while the sudden exacerbation of violent, diffuse abdominal pain is due to the involving of the peritoneum itself. I see nothing especially worthy of attention in the so-called McBurney point. Pain over the seat of pathology is certainly a natural feature, and generally the appendix lies under a point midway between the umbilicus and the anterior superior spine of the ileum. But it is not always so by any means, for I examined with great and anxious care, a short time ago, a young physician with severe pain over the so-called McBurney point, when on operation the long appendix was down in the pelvis and perforated. It is a fair proposition to say that tenderness and pain on pressure is approximately over the seat of disease, so to speak, of a so-called McBurney point is redundancy. Then, again, pain on pressure may be reflex, bobbing up in remote regions of the abdomen. The sudden, acute, diffuse abdominal pain arising in appendicitis generally subsides to the right iliac fossa after thirty-six hours, and one can nearly always elicit pain on pressure. This pain on pressure is doubtless the motion transmitted to a sensitive, inflamed peritoneum, and not the dragging on an adhesion, as some assert, for adhesions so newly formed can have no nerves formed in them. But man is subject to appendicitis four times as frequently as woman, due, perhaps, to Gerlach's valve being small in man, and thus not allowing the foreign body to escape after entrance, or due to the greater activity of the psoas muscle in man. The appendix lies on the psoas muscle in man more frequently than in woman, and on its longest range of activity, hence when the appendix contains virulent and pathogenic germs the long range of action of the psoas so traumatizes the appendix that it induces the escape or migration of the accidental virulent pathogenic microbes through the appendicular walls into the peritoneal wall or cavity. Common sense and experience would dictate that the pain on pressure would occur in any point of the abdomen possessing inflamed structures. Since probability is the rule of life, it is well to look to the three great regions of dangerous peritonitis, viz., pelvic, appendicular and gall-bladder region.

The digestive tract has still another common seat for sudden, acute abdominal pain, and that is the gall-bladder region. The sudden, acute abdominal pain in hepatic colic is not generally so violent as many others accompanying acute diseases of the digestive tract. Patients relate that the pain is aching, dragging, and in the active stage cutting or tearing. Some relate a feeling of tightness or fullness. But it depends on whether the stone is attempting to enter the mouth of the duct or whether it has already entered. I have had typical cases where operation proved that the stones only attempted to enter the duct. No doubt these are the cases which say so often that they have some severe pains at any time, but especially after taking hot meals, hot or stimulating drinks, whence arises excessive peristalsis inducing short, temporary hepatic colic. Now, when the gall-bladder has many small stones in it, and when one more or less often attempts to engage in the neck of the gall-bladder, the pain is rhythmical. It begins slowly and rises to a maximum. At the maximum the pain is intense. We have observed such cases and afterward operated on them, removing many small stones. Gall-stones are perhaps four times as frequent in women as in men; why, we do not know. In my experience patients can generally localize the pain in gall-stones more accurately and definitely than almost any other sudden, acute abdominal pain. They refer the pain to its proper locality; however, I must admit that this reference is before rupture. After rupture of bladder or duct the pain is indefinite, like other perforations. The sudden, acute abdominal pain in gall troubles is characterized by more slowness, less acute intensity, distinct periodicity than invagination, appendicitis or perforation of the digestive tract. Jaundice is not necessary. Jaundice depends on the color of the eyeball and not the skin. A feature in gall-bladder pain is that it extends well toward the dorsum. Age aids in diagnosing stone in the biliary passages to some extent.

In renal (genito-urinary) colic it must be said that the pain resembles that of the hepatic colic in many ways, in rhythm being paroxysmal. It intermits and is often agonizingly spasmodic. It requires much careful study to differentiate the sudden, acute abdominal pain in hepatic and renal colic from each other. This is important, for the plan of ac-

tion is very different. The pain in appendicitis, renal, and hepatic colic are in close relation.

The sudden, acute abdominal pain arising from the genitals (genito-urinary) is more easily interpreted and managed. The pain can be more definitely located by the patient and sudden disorganization of the viscera, being accessible in the pelvis, is much more within control of the gynecologist. The sudden, acute abdominal pain from the genitals is generally a ruptured ectopic pregnancy or the very rare matter of the rupture of a pyosalpinx into the peritoneal cavity. Most other pelvic pains are of slower origin and almost always diagnosable. Sex and the reproductive age aid in the interpretation of the case.

Remember the three dangerous peritonitic regions, viz., pelvic, appendicular and gall-bladder.

In regard to the character of sudden, acute abdominal pain, it varies as to (a) its mode of attack, and (b) as to the viscera attacked.

If one will closely watch the sudden, acute abdominal pain, it will be quite apparent that the character of the pain in most of the acute affections of the abdomen is very similar. We only observe in reality a difference in degree of pain from the bearable to the agonizing. In perforation the character of the pain is the same in all viscera. In invagination it is paroxysmal and periodic, at least at first, due to irregular and violent peristalsis in internal strangulaton; it is generally intense and periodic, due to violent peristalsis, later continuous and of an aching, dragging character, due to paralysis of bowel segments. In appendicitis the pain is nearly always sudden and intense, i. e., the perforative variety. The variety of appendicitis with slowly increasing pain is likely lymphatic in invasion and not dangerous, simply medical, of course the appendicular mucosa may be perforated. Sudden, acute abdominal pain of a lancinating character, and being quite continuous, is very liable to be perforation of the appendix or digestive tube, and the continuous agonizing character of the pain is a heraldic symptom of diffuse peritonitis, the knell of life. It may be remembered that the character of the sudden, acute abdominal pain will depend on the capacity of any viscus for peristalsis, i. e., its capacity to cause colic by violent, wild, irregular muscular action. In peristalsis periodicity must not be lost sight of, and the etiology which gives rise to the irritation, inducing the peristalsis. It may be transitory in character, as food irritation, rapidly forming and reducing invagination or a stone attempting to enter a duct. Or the pain may be continuously periodic, as a stone lodged in some canal, appendix, ureter, small intestine, or biliary ducts.

In regard to the location of sudden abdominal pain we have to consider (a) the seat of pain as felt by the patient; (b) the pain elicited by pressure (tenderness); (c) local rigidity of the abdominal muscles; and (d) anæsthetic or hyperæsthetic condition of the skin of the abdomen.

In general, sudden, acute abdominal pain is referred by the patient to the umbilical region, to the solar plexus, directly over the abdominal brain. This, in my opinion, is a nervous center, possessing the power of reorganization, receiving and transmitting forces of controlling visceral circulation and of inducing reflex or referred pain. The irritation of peripheral visceral nerves is transmitted to the abdominal brain, whence reorganization may make the pain felt over the abdominal brain, at the seat of pathology or a remote abdominal point due to a very supersensitive nervous system.

As to local tenderness of pain elicited by pressure, it indicates a pathologic condition of the peritoneum (inflammatory). The pain is induced by motion or disturbance communicated to a sensitive inflamed peritoneum.

Local rigidity of abdominal muscles indicates adjacent underlying pathology of organs supplied by the same nerves as the muscles which exercise a protective agency to preserve rest for damaged tissue, to assume repair and prevent further destruction from motion. Hyperæsthesia or sensitiveness of the skin, due to transmitted irritation, is often present, but is not very reliable as to locality, for it is dependent on peculiar symptoms, and accompanies, more or less, though irregularly, most acute abdominal affections. Of course, it would be expected that the severe, sudden, acute pain in the kidney and gall-ducts, being very near to the abdominal brain, would be difficult to separate from the solar plexus. Lead colic may deceive the most elect as to its etiology or seat.—University Medical Magazine.

Malpractice Suits and Mental Impressions.

The strange popular notions anent the effect of transplantation of animal tissues to man prevalent for centuries, still survive in certain districts. Dr. H. E. W. Barnes of Creston, Ia., reports (Iowa Med. Jour.) that a malpractice suit was recently brought in that state under the following circumstances: The patient had tibial necrosis. Destruction of the bone was so extensive that the surgeon determined to transplant bone, and used the femur of a large mastiff. The patient made a good recovery, but brought suit against the surgeon for "having thus produced in her an uncontrollable impulse to lift her leg when she passed a telegraph pole."—Chicago Med. Recorder.

Time is generally the best doctor.—Ovid.

Miscellany.

Surgical Morals.

According to Mr. David W. Cheever in the present feverish condition of operative surgery it may be prudent to ask ourselves what is the object of an operation and how should we regulate our conduct in unforseen contingencies (Boston Medical and Surgical Journal). The problem may be condensed into the following questions: 1. When to operate. 2. When not to operate. 3. When to stop. 4. When not to stop. In regard to the first question, says the author, if we confine our selection of cases to those which clearly come under the cardinal rule for operation—namely, to relieve suffering, to prolong life, or both—there will be very little difficulty in the choice. We must consider whether life is imperilled and whether the suffering can probably be relieved. If we are asked to operate, he says, shall we accept only good risks, and decline the doubtful or hopeless cases? The second question is a difficult one to determine. Operations should not be taken without the full consent of the patient and his family, if it is possible to obtain it, and there should be some responsible person who understands the nature of the operation to be done and what may be reasonably expected from it. No operation should be done when the patient is in a state of shock, unless hemorrhage, apnœa or obstruction of the bowels is present, as in hernia, for example. If there is time the systemic condition of the patient should be fully considered—for example, as to the integrity of the heart, the arteries and the kidneys. In a case of no emergency the age and the prospect of life of the patient should be taken into account. In cases of glandular infiltrations which are so extensive as to preclude perfect removal, he says an operation should not be done; for instance, in a tuberculous organ, or in a sarcoma of the antrum where the sphenoid cells cannot be extirpated. There are two important exceptions to this rule, however: 1. To relieve agonizing pain an operation should be done on any slight chance, for, unless the suffering can be palliated, the patient had better die than live. 2. In a forlorn hope, so to speak, after the risk has been fairly stated, the patient is entitled to an operation, if he wishes it, and if he takes the responsibility; here, however, the limit must be those cases in which there are one or more chances of success. Must we stop when the patient fails? Not always, for the failure may be due to the anæsthetic or even to simple nausea. In this case the surgeon should stimulate the patient and consider carefully before giving up the operation. Stopping, he says, is indicated when we come to the end of all that can be taken out—for instance, in a case of malignant tumor; in an operation in the abdominal cavity, when a glance or a touch reveals that the tumor is not removable and that it has grown into vital parts; in an operation on the surface of the body when stopping will not imperil life so much as going on; in syncope with a pulse at 108, with sighing respiration, and with a colliquative sweat. Concerning the fourth question, says the author, When not to stop, keep on as long as the patient breathes; it is his only chance. The contingencies are: An operation which has so far displaced and broken up a soft internal tumor as to render death from bleeding or from sepsis certain if any is left; an oozing hemorrhage; a difficult tracheotomy; a crushed skull with a pulse of 40 and Cheyne-Stokes respiration, having trephined, he says, we cannot stop until compression is removed and the bleeding checked; extravasation of urine; and a bladder to be drained; if the patient dies in the process we must drain the bladder. If we do not do all these things, the patient dies; his only chance lies in their being done. Surrounded with these terrible chances the surgeon, like the executioner, raises or depresses his thumb, and the patient lives or dies. There is no responsibility like this. All this should teach us, first, to be over-careful about getting in so deep that we cannot withdraw, or about meddling with what had better be left alone. Second, not to imperil life to cover our mistakes, for we all make them. Third, in self-defense to withdraw from an operation or from a case at once if our advice is not followed. To bear the responsibility, we must be absolute masters.—Medical Record.

Dislocation of the Fourth Cervical Vertebra—Reduction—Recovery.

By William H. Nammack, M. D., New York.

George W——, aged twenty-one, on September 2, 1895, while bathing at Far Rockaway, L. I., dived into shallow water and struck his head against the bottom. The forcible flexion of his head resulted in a dislocation. He became unconscious and remained so for about an hour as a result of the concussion of the brain, but this condition responded readily to the usual remedies.

On examination by Dr. Thomas J. Kearney and myself a marked deformity was apparent. we felt the vertebra prominens, and the sixth and the fifth vertebræ were also found in their normal position. Above these, however, the spine was bent forward, and a wide gap posteriorly was easily felt and was even visible. The head was completely immobile and the malposition of the parts was peculiarly characteristic. There was no paralysis either of motion or of sensation, severe pain, of which

the patient complained, being the only pressure symptom. Deglutition of liquids was difficult and painful, that of solids impossible.

By placing the finger in the posterior part of the mouth, the projection forward of the displaced vertebra was easily felt, so that we believed that the articulation between the two vertebræ, the fifth and the fourth, was torn open, that the supraspinous and the infraspinous ligaments, the ligamentum subflava, and posterior common ligament were torn through, while the ligamentum nuchæ remained intact, drawing the occiput downward toward the vertebra prominens and so increasing the deformity.

Upon consultation it was decided to endeavor to reduce the dislocation, and the dangers incident to such a step were explained to the family, who left the treatment entirely to our discretion. Drs. Burns and Bumster, whom I called upon for assistance, acquiesced in the following plan of treatment:

The patient was placed prone upon the table with his head and neck extending beyond its end, and supported in that position during the administration of ether. As soon as the anæsthetic had produced complete relaxation, extension was made from in front with counter-extension at the shoulders, the greatest care being taken that no sudden movement should be made. There was an immediate and gratifying response to these efforts, respiration was not at all affected, and we could then distinctly feel the spinous process of the fourth cervical vertebra in line with those below, while there was complete disappearance of the deformity. Having thus reduced the dislocation, the next problem was to retain the bones in their proper position. The solution decided upon was a plaster of Paris cast, which was applied so as to extend from the occiput and the thyroid cartilage above to the first dorsal vertebra and the sternum below, care being taken to allow sufficient room for the neck. The patient was then placed in bed and watched carefully for three hours, during which time his condition remained satisfactory. He was allowed to go about in a week, the plaster was removed in three weeks, its place being taken by roller bandages, and he was discharged, cured in five weeks from the date of the injury. Since then he has been attending to his work as a compositor, and he is apparently none the worse for the accident.—Medical Record.

American Physicians Honored in China.

Dr. Eli Barr Landis, ex-resident physician of the Lancaster County Hospital and Insane Asylum, has recently received the Order of the Double Dragon from the Emperor of China, in recognition of services rendered by him during the war between China and Japan. The same distinction had already been bestowed on another American medical missionary, Dr. B. C. Atterbury, for work in connection with the Red Cross Society in the late war.—The Medical Record.

BOOKS AND PAMPHLETS RECEIVED.

"Retinitis and Choroiditis," by L. Webster Fox, M. D., from The Medical News, May 23, 1896.

"Management and Treatment of Tuberculosis in the Asheville Climate, with Report of Cases," by James A. Burroughs, M. D., Asheville, N. C. Reprinted from the N. C. Medical Journal.

Gray's Anatomy, Descriptive and Surgical.

An American Text Book of Applied Therapeutics, edited by J. C. Wilson, M. D., assisted by Augustus E. Eschner, M. D.

"Feeding in Early Infancy," Arthur V. Meigs, M. D.

"Ovarian Tumors Complicating Pregnancy, with Report of a Case," by C. S. Bacon, M. D. Reprinted from the Journal of the American Medical Association, September 12, 1896.

"Constipation; Some of Its Effects and Its Non-Medicinal Treatment," by E. S. Pettyjohn, M. D. Reprinted from the Journal of the American Medical Association, August 1, 1896.

"The Differential Diagnosis of Neurasthenia and Its Treatment," by Elmore S. Pettyjohn, M. D. Reprint from American Medical Association Press.

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ON BETTER METHODS OF TESTING THE HEARING OF RAILWAY EMPLOYES.[1]

BY ROBERT BARCLAY, A. M. (TRIN. COLL.), M. D. (COLL. PHYS. AND SURG., N. Y.), OF ST. LOUIS.

Consulting Aural Surgeon to the Hospital Department of the Missouri Pacific; St. Louis Iron Mountain & Southern; and Missouri, Kansas & Texas Railway ompanies; Member of the American Otological Society; Formerly Assistant Aural Surgeon to the New York Eye and Ear Infirmary, New York; Aural Surgeon to the City Hospital, Missouri Pacific Railway Hospital, St. Louis Baptist Hospital. St. Mary's Infirmary, South Side Dispensary, Mariae Consilia Deaf and Dumb Institute, House of the Good Shepherd, etc.

Mr. President and Gentlemen of the Association:

At your second annual meeting, in May, 1889, I had the honor of presenting a paper[2] directing your attention to the fact that no safe provision had as yet been made against the dangers arising from deafness among railway employes; and raising the question as to how we should dispose of this, that the corporation might not suffer losses through suits for damages to passengers and freight, and that the employe might not meet with injury or death through this cause. In that paper, an earnest effort was made to emphasize the fact "that railroad service tends to the production of deafness, especially in ears already slightly affected; that it may be developed at any time, without the employe's knowledge; may be ignored by him, when recognized, and may become suddenly aggravated, while on duty; and that it may lead to loss of life, limb and property,"—a copious bibliography being appended in evidence thereof. A suggestion was offered, that you present the subject, in suitable form, to the

[1] Read before the National Association of Railway Surgeons at its ninth annual meeting at St. Louis on April 30, 1896.

[2] THE WHISTLE SIGNAL: A PLEA FOR THE MORE SAFE MANAGEMENT OF RAILROADS. Journal of National Association of Railway Surgeons, Fort Wayne, Ind., July, 1889, Vol. II, No. 2, pp. 57-65.

proper corporate officers, superintendents, department masters, and others, whose duty it is to employ, superintend and direct the men in the machine shops and on the road; and that the employe be informed of these facts, and of the dangers which deafness brings to those placed under his professional care, to the corporation, and to himself. And the opinion was expressed, that you would do well to make certain suggestions which the corporation should adopt for its own protection,—such as the following:

All applicants for employment in the machine shops or on the road,—in consequence of whose deafness, loss of life, limb, or property might occur,—before being engaged, should be pronounced duly qualified by the aural surgeon of the company.

All candidates for promotion from the machine-shops, or elsewhere, to positions on the locomotive-engines; and from the position of locomotive-fireman to that of engineer, before receiving promotion, should be pronounced duly qualified by the aural surgeon.

All employes, in any position whatever, in consequence of whose deafness, loss of life, limb, or property might occur, should report at stated intervals to the aural surgeon for his examination.

If, on examination, deafness be found so profound as to otherwise endanger the life of the employe and that of others placed under his official care, he should be told thereof, warned, and, if necessary, be forthwith relieved from duty to undergo suitable treatment.

If, in the faithful discharge of his duty to the company, the employe become permanently disabled by deafness, he should not therefore be dismissed from the company's service to earn his daily bread, at the risk of his life and that of others, on some other road; but the company which he has so faithfully served, should consult its own best interests by pensioning him, or else providing remunerative employment for him in some other suitable position where no special danger will attend his deafness.

Lest the services of a qualified applicant or employe be lost, or an unqualified one engaged, the company should take the precaution to have these aural examinations properly made.

The plea was concluded with an exhortation to obey, in this matter, the official order that reads, "REMEMBER THE RULE THAT REQUIRES ALL EMPLOYES, IN ALL CASES OF DOUBT, TO TAKE THE SIDE OF SAFETY."

That paper seemed so far to express your own views as to have been deemed worthy of your own publication and distribution to every Railway Manager in the United States.

Some of the little seed thus widely sown by you seems to have fallen upon good ground, and has sprung up, bidding fair to bring forth fruit an hundred-fold. Many roads, as I have been credibly informed, now require as a qualification for service in their employ a certain degree of hearing power, under prescribed methods of testing. The assurance, by suitable tests, of the employe's hearing power, as essential to the more safe management of railroads then first proclaimed by your respected body has thus been practically acknowledged by Railway Managers—one more confirmation of the prophecy made before your association in 1891 by our esteemed Dr. Outten: "The officials of railway corporations will see the time has come when the physician will not only be an essential, but an economic factor in the operation of any railroad system." They have heard your voice; they have felt your influence; they have acted upon your advice. And as this is a just occasion for felicitation to you, may it stimulate you to speak once more to those who have shown their willingness to act, under guidance of your better judgment, in this matter,—to those who, recognizing the necessity of separating the grain from the chaff, but unskilled in the use of auditory tests, have begun to wield the flail to their own injury and greater danger! "Unqualified activity, of whatever kind," said the great German poet, "leads at last to bankruptcy." Recollect that you suggested this: "Lest the services of a qualified applicant or employes be lost, or an unqualified one engaged, the company should take the precaution to have these aural examinations properly made." How, then, can it take this precaution without your further guidance? It seems that your Association, as such, has not proclaimed its views in pursuit of this end.

Who could have heard unmoved the remarks of Doctors Hoy, Welch, and Outten upon the subject of the inefficacy of the

prevailing methods of testing the hearing of railway employes?

Right here, I beg to disclaim all desire to cast the slightest reflection upon any who approve of and cling to methods of whose disadvantages they have not yet been made sufficiently aware; but would rather direct your attention to certain features of the matter of testing the hearing, which, in my opinion, may be of practical value toward enabling you to solve this problem aright—for, until it is so solved, it will continue to vex all parties concerned. Of the desirability of the end, there is no question; of the means at present employed, there is certainly valid ground for question. And I make that statement for the following reason: If the prevailing methods of testing be such as to afford no guarantee against the loss of the services of a qualified applicant or employe, nor assurance of the rejection of an unqualified one, surely they are inefficacious, or inadequate. Now, such is indeed the fact. For, on careful study of the tests employed by the different railroads,—so far as I have been able to learn them,—I find that under any of them, you would reject one of the most reliable employes now in service if he applied for a similar position upon your road; that you would accept another, almost totally deaf without the artificial drum-head of cotton which he now wears with hearing beyond exception. Under the prevailing tests, you would have had to retire from service an engineer whose hearing was so impaired as to have rendered his ranking officer unduly, but, fortunately, unnecessarily anxious, who continues in service with safety. And I can cite you a case of a train-dispatcher whose deafness, until quite recently, has been unsuspected; who was relieved of duty at his own request; who can hardly hear a shouting voice a foot or two from either ear; who is wholly deaf to the tick of a forty-eight-inch watch on closest contact; but who claims to hear the "ticker" at his office, and the human voice—as I find—by lip-reading, so as to attend to his business without mistake or complaint. Again, if a skilled mechanic or engineer should apply for a position, you could not determine, with the prevailing methods of testing the hearing, whether his marked deafness, if such there be, is due to the usual accommodation of the healthy ear to his business conditions, or due to a dulling of the auditory perceptive apparatus from perhaps advanced but unsuspected Bright's-disease. With watch and voice tests, you could not distinguish. To do so, you would have to employ also at least tuning-forks. And if you should accept or reject such applicant upon these watch and voice tests alone, you would make either a most fortunate guess or a very serious blunder. Under the conditions imposed upon an ear in railroad service, it becomes modified in susceptibilty and structure, which disqualifies it for normal audition in ordinary quieter surroundings elsewhere. If the ear be perfectly healthy at the time of entering train service, and if no inflammatory action supervene, the functional modification is established slowly, and to a degree advantageous only to him as an employe, since his ear acquires power to resist the noxious influences of exposure, while retaining in its new circumstances ability to hear ordinary sounds—such as, for example, the human voice—a thing which here is beyond the power of an ear whose hearing is normal under other circumstances. This condition is so well defined in metal-hammerers, engineers, and mechanics generally, that it seems permissible to term an ear with such modified functions a "mechanic's-ear." An instance of this condition may be found among boiler-makers, who at work converse in an ordinary tone of voice, which is inaudible to another person present whose hearing is normal in ordinary quieter surroundings elsewhere. Perhaps a better illustration is this: if, in a quiet place, a remark in a low tone of voice be addressed to a rather deaf boiler-maker and yourself, you, and not he, will hear it; while if you both now go close to boiler-makers at work, a similar remark, made in the same low tone of voice, will be heard by him and not by you. Now, to distinguish a "mechanic's-ear" from one affected by disease, is impossible with the office tests by watch and voice alone; and as it is desirable, even essential, to make this distinction, or to determine just how far such changes in the hearing are advantageous, as arising from the adaptation to habitual environment and extraordinary duty, or disadvantageous, resulting from morbid processes, such tests as are necessary to determine this should be em-

ployed in all doubtful cases, *i. e.*, cases which fail to satisfy the scale of hearing prescribed as qualifying for audition, in ordinary surroundings. In fact, when you consider the cases to which I have already alluded, where the prevailing tests with voice and watch alone would have proven wholly misleading and subversive of the advantages of testing the hearing at all, it would seem that we cannot be too careful and thorough in our methods; and if the necessary methods are so intricate as to require a special preliminary education therefor on the part of those whose duty it might be to make such examinations, this work should be assigned to such only of the railway medical staff as are willing and able to devote sufficient time and energy to such essential preparation.

In other words, prudence requires that these examinations should be properly made; for an inefficacious or inadequate test is worse than none.

Tests should be made with watch, voice, and whisper; high and low tuning-forks, and suspended steel rods. The ear should always be inspected; and the functional condition of the Eustachian tube should be determined.

As the degree of hearing, in many cases, varies in different surroundings, the examinations should, if possible, be made in the same place—preferably in that identical place where the examiner has tested the normal ears in determining what is normal for his own watch, voice, and whisper, tuning-forks, etc. For, in methodical testing, each observer must test his own instruments upon a large number of healthy adult ears, and therefrom deduce a normal standard, with which to compare the results of all subsequent examinations. A certain percentage of the normal hearing-power having been determined upon as essential to qualification for employment with the company, each examiner can adapt this to his own testing instruments, in due proportions; and he must bear in mind that the hearing-power varies directly as the square of the hearing-distance of a sonorous body from the ear. In using the fractional form of prescribing or recording the degree of "hearing," either "hearing-power" or "hearing-distance" should always be specified, lest mistakes arise from mistaking the meaning of the term, "the hearing," and substituting the "hearing-power" for the "hearing-distance"—a serious difference, since one of these is the square of the other.

In testing, regard should be had to the fact that the two ears should act in conjunction. The auditory field of each ear overlaps the median plane by about twenty degrees. This gives a field of about forty degrees, for normal ears, along the median plane, a field in which double hearing enables the hearer to determine the direction of a sound without turning his head, and in which he is doubly warned against approaching danger from sonorous bodies, both in front and behind. In affections of hearing where these auditory fields, right and left, are so narrowed as not to meet and overlap at the median line, this advantage is lost; and instead of being able to recognize approaching danger best, when head-on, and to direct either ear at will for its best service, without exclusion of the other, by turning it slightly toward the source of sound, the sound is either unnoticed, or, if noticed, the defective hearer must turn one ear toward it so far as to exclude the other ear from joint service. Hence the suggestion, to determine whether the auditory field be contracted, and whether the two ears act best in conjunction; and, if not, whether the defect be of a degree or character sufficient to disqualify. The observer, therefore, should use the watch and voice tests, not only in the axis of best hearing opposite the ear, but clear to the limits of the normal auditory field, both in front and behind.

In testing with the watch, it should be remembered that it gives out but two sounds of a certain pitch, which are ofttimes unheard by an ear whose conducting or perceptive apparatus has been impaired; and yet, this very same ear may hear the tick of another watch of different pitch, and similar sounds,—as with the train-dispatcher mentioned above, who could hear his office "ticker," although deaf to my forty-eight-inch watch, even on pressure-contact. By using a stop-watch, you can readily determine whether or not the examined hears its tick, as he will have nothing but his hearing to aid him in determining whether or not the watch be going.

The watch test alone is of little value; and there is no constant proportion between the

reduction of hearing the watch and that of hearing speech. Bear in mind that the noisier the occupation in which the employe has served, the less will probably be his hearing for the watch, when in a quiet place.

The most popular and important test, for ordinary, practical purposes, and especially for those depending chiefly upon speech and conversation, is that with the human voice. As no two persons possess voices of equal acoustic quality, and, as the various words—the vowels and consonants—employed in verbal tests have different logographic value, it is absolutely impossible to establish a satisfactory uniform standard for the voice test. "Such words as *chair*, *horse*, and *house*, are heard three times as far as *time* and *tear*. In testing with the voice, therefore, words should be selected for their logographic value, and so arranged as to form sentences for which the listener is unprepared, and such as cannot be constructed by logical inference or intelligent guesswork when some of their parts only are heard. In preparation of a list of such verbal tests, you will doubtless be greatly aided by consulting the articles of Drs. A. H. Buck and Clarence J. Blake, in the Transactions of the American Otological Society for 1876 and 1881, where you will find a table from which to select materials for a list of test words and sentences, based upon *intensity* rather than upon *pitch* of the voice-force producing them, and serving, as in case of chronic catarrh of the middle-ear, as a measure of obstruction of sound. It should be remarked, that these test-sentences should be constantly interchanged, that they may not become familiar to anyone who may possibly have to be tested later. It is necessary that the examiner should test these sentences upon healthy ears first, to determine the normal hearing-distance of his own natural voice for these various words and sentences, so that he may be able to make intelligent comparison of these with the results of subsequent examinations. Owing to the damping of vowels (which are more sonorous than the consonants) by lowering the voice or whisper, the consonants have a better chance to be heard; and, as the vowels are "quelled," the consonants become relatively more distinct. In consequence, the deaf can usually hear a moderately loud voice more distinctly than a shouting one. In testing, therefore, be careful not to raise the voice too high; and in conversation where the deaf are present, "Do not elevate the voice too high, when you wish to make a deaf person hear, but do not lower it too much, unless to a whisper, if it is not desired that he should hear."

In testing, use every precaution to exclude the hearing of the ear not tested; to prevent the examined from lip-reading; and do not fail to determine the degree of bone--or tissue--conduction in the case examined, of which account should always be taken in determining the power of hearing by air-conduction. The bone-conduction for a whisper is less than that for a spoken word; yet the deaf "can often distinguish words spoken in a whisper better than when they are spoken in a low tone of voice." The reinforcement of the sound of the voice, on one side more than on the other, by bone-conduction, can readily be determined with tuning-forks; a vibrating, low-pitched tuning-fork, the handle placed against the teeth, or vertex, being heard louder in that ear which is reinforced the more by bone-conduction,—assuming, of course, that the auditory perceptive-apparatus is equally sound upon the two sides. But that that may not remain a mere assumption, it is advisable that both high- and low-pitched tuning forks should be employed in testing,—after having first been used upon healthy ears to determine the normal hearing for them both by air- and by bone-conduction. A comparison of the time during which these forks are actually heard (both by air-conduction and again while in contact with the bones of the head,) with the time in which they are similarly heard by the normal ear will enable you to form a precise idea as to the location and degree of the defects. In other words, by this, the so-called Rinnè's method, we "may discover the conditions of the sound-conducting and sound-perceiving parts, either singly or combinedly, as well as their relative quota." As to this test, the committee of the American Otological Society, appointed to examine and report on "The Examination of the Power of Hearing and How to Record its Results," made this statement: Rinnè's method is the most expeditious and practically the most important. It should be employed in a routine way, just as the watch and voice tests, in every case where impair-

ment of hearing comes into question at all."* The use of vibrating, suspended steel rods—the Koenig's rods, so-called—of a range of 20,000 to 60,000 vibrations a second, will enable you still more surely to determine the location, nature, and degree of an abnormal process impairing hearing.

One might question the necessity of introducing these latter tests; but when I report that two cases of far-advanced Bright's-disease, hitherto unsuspected by the examined and his physician, have been detected through an examination made by me with these instruments, although the hearing had not become impaired so far as to disqualify under prevailing watch and voice tests for railway employes, I think you will not lightly reject them.

The condition of the Eustachian tube should be considered; as, if the tube be closed, the hearing may be so affected as to disqualify an employe or applicant who might pass muster if only the tube were first opened and the tympanum, inflated.

Above all, the ear should be inspected. The presence of "wax" in the ear, even where the hearing is still normal, is a dangerous condition; as, by the swelling of this "wax," or by its displacement against the drum-head, deafness may suddenly occur. In one case, to my knowledge, an engineer was nearly thrown from his seat by sudden vertigo, caused by displacement of wax and its impaction against the drum-head. In one of the cases above cited, where deafness was almost total without an artificial drum-head of cotton, worn with almost normal hearing—no discharge from the ear having been seen for over thirty years—the individual would undoubtedly be pronounced qualified under the prevailing tests, provided no inspection of the ear were made. Yet, such a man would be a very unsafe employe in train service, as a slight displacement of his artificial drum-head might be attended with sudden and profound deafness.†

In testing with the voice, you will find that the sound of the letter "B" is heard less and less, proportionately to an increasing loss of the drum-head of the ear. In cases showing this reaction to the vocal test, therefore, be sure to look carefully for this condition—a perforated drum-head. Inspection will aid you in recognizing many conditions where the hearing is sure to be variable; and these cases demand careful study and thought before being finally passed upon by you.

So much for the methods of testing the hearing and examining the ears.

Experience has shown conclusively that, although the method of testing the hearing at one's office should be the same for all, the required percentage of hearing for applicants (unless they be already inured to noisy occupation) is inapplicable to the trained, educated mechanic and the locomotive-engine employe. The required degree of hearing for such men should be a special one; that required of train-dispatchers and of telegraph operators should be different from that required of engineers, firemen, and others of the train-crew. The required degree of hearing should vary with the different branches of the service: a special one being prescribed for each set of employes in consequence of whose deafness loss of life, limb, or property might ensue. This scale cannot be accurately determined *instanter*. If worth doing at all, it is worth doing well; and, better, still later; and, again; until finally done right. If hearing is to be tested and a degree of normal hearing to be prescribed as a qualification for active duty in railway service, why! in the name of common sense, let the tests, the methods of examination be efficacious and adequate; and the required degree of hearing for the various branches of the service be graduated and adapted more suitably to each—"that the services of a qualified employe or applicant be not lost, nor an unqualified one engaged."

It seems, too, that the end aimed at might be attained better, and, perhaps, more quickly, by a concerted movement on the part of railway managers, their surgeons, and their otological specialists, toward the establishment of more satisfactory and uniform methods of testing the hearing and examining the ears of their applicants and employes; and to determine, more to their advantage, a scale of required hearing under those tests, more suit-

*Transactions of the American Otological Society, 1887, p. 22

†Rupture of the drum-head of one ear, affected by chronic catarrhal inflammation, by blowing the whistle of his engine while passing under a roadway, with subsequent increased deafness, happened to Daniel McLaren, Esq., later President of the Cincinnati Hamilton and Dayton Railway Company. (S. Sexton, M. D., *The Ear and Its Diseases*, New York, 1888, page 217.) Had the custom of periodic expert aural examination and inspection of railway employes been established at that time, Mr. McLaren would doubtless have escaped this accident, through previous warning as to the weak condition of his drum-head.

able,—each branch of the service to have its own special degree. The aural surgeons of the different roads would certainly co-operate with the proper officers of the Medical and Operating Departments of their respective Roads, toward this end. They might be accorded such data, and opportunities for further investigation, as may be deemed necessary to enable them to determine these points the more accurately and the more economically and satisfactorily to all parties concerned. A comparison of their individual findings and opinions, through personal correspondence or through the press—and I feel confident that the genial and obliging Editor of The Railway Age would at any time cheerfully aid in this investigation by ceding a portion of his valuable columns to the reports of the aural department of Railway Hospital service—a comparison of individual findings and opinions, I repeat, would enable us to promptly obtain the *desideratum*. And, as I believe this to be the only method of perfecting the good work already so well begun by you, and of rescuing from contempt and ridicule what is otherwise indispensable to safe and economical management of our railroads, I trust it may commend itself to your better judgment and active influence, notwithstanding the manner of its presentation here to-day. And I thank you for your kind attention.

3211 Lucas avenue.

DISCUSSION OF DR. BARCLAY'S PAPER.

Dr. D. Emmett Welsh: The paper covers the ground very thoroughly with reference to examining the hearing among railway employes. This is a subject to which, until recently, very little attention was given. I have nothing to do with the examination of the hearing of telegraph operators; therefore, I can give you no information relative to the examinations made by the attendant of that department. In the examination of a new employe the ears are always carefully examined, not by the watch test, but by the speaking voice, one ear being plugged tightly with cotton. The speaking voice is regulated at the ordinary pitch and the applicant is placed six feet away from the examiner. If at that distance he hears conversation in the ordinary voice, that is the end of the examination of that ear. The other ear is then plugged tightly with cotton and examined in precisely the same manner. Among the older men employed on the road the ordinary speaking voice is simply used, and even though the applicant may be partially deaf very little attention is paid to the same on account of his long employment. We often know that an applicant may be extremely deaf on account of the sounds which are produced during his work, and while these sounds are painful to the normal ear, in his work as an engineer or conductor he is able to hear sounds that to us are not recognizable, and hence not very much attention is given to ear trouble except in new employes in the manner in which I have stated.

AN ALUMINUM CLAMP ARTERY COMPRESSOR TO SUPERSEDE THE LIGATURE.*

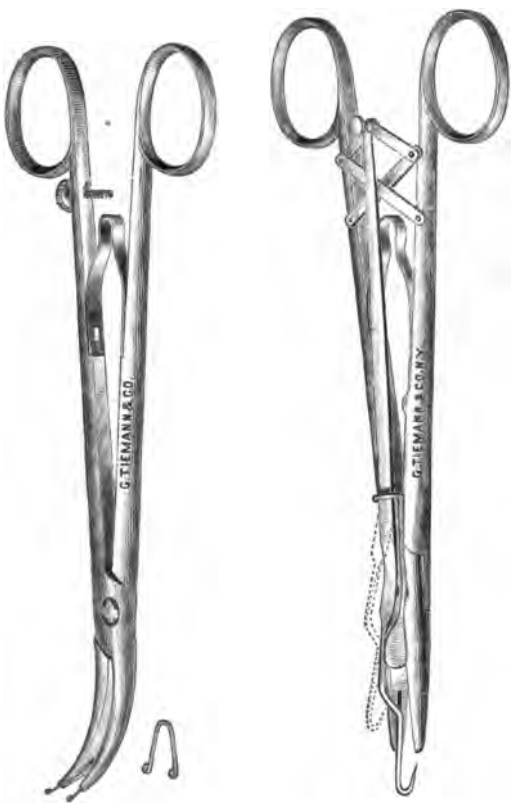
By Evan O'Neil Kane, M. D., Kane Pa.

I am glad to avail myself of this opportunity to bring to the notice of the association my device for the control of hemorrhage. I realize that it is in the sphere of accidental surgery that the aluminum clamp artery compressor has its greatest field of usefulness. In emergency practice we have but little time to prepare or obtain aseptic ligatures, and still less time to use them. Often the railway surgeon is called upon to operate without assistants, save, perchance, some well-meaning, but ignorant fellows, who are more hindrance than help. Furthermore, rapidity in the completion of an operation and the loss of a minimum amount of blood are points of cardinal importance in the prevention of that shock too often present in this class of cases. Here, then, this device, which saves much time and does away with that necessity for the aid of an assistant, which is required where the ligature is used, shows most strikingly its advantages.

The following extract from an article published by me in the American Medico-Surgical Bulletin, explains fully what my aluminum clamp is: "This clamp consists of a small piece of curved aluminum wire, each extremity of which is thickened and rounded, to render it unirritating, by being bent back upon itself, so that it presents much the appearance of a miniature horse shoe with heel-corks. This

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

curved wire clamp is placed between the jaws of a specially constructed pressure-forceps with a spring on the handles, slipping being prevented because the wire fits into a groove on the inner aspect of each blade. The upper or 'heel-cork' extremity of the wire-clamp presents at the beak of the blades, the turned-over ends of the wire "heel-cork" overlapping sufficiently to prevent the wire from sliding back within the blades when pressed into the tissues about a vessel. The accompanying illustrations will best explain both the shape of the clamps and the construction of the forceps.



Half a dozen or more such forceps, kept 'threaded' by an assistant and laid within easy reach of the operator, would facilitate rapidity of application. The method is easily comprehended. Grasping the end of the vessel with a tenaculum or hæmostatic forceps in the usual manner, only with the left instead of the right hand (should I be operating without an assistant), I make slight traction upon it, as when about to ligate in the usual way. Then, holding in my right hand the clamp retaining forceps, I slide the clamp over (or rather around) the vessel. Having the clamp in position, I compress it firmly about the vessel by simply closing the jaws of the forceps. All this is but the work of an instant, yet the vessel is thus tightly and permanently compressed, for the aluminum clamp is unyielding, and will retain its hold independently when applied to the largest vessel. Like the ligature, the clamp cuts the inner coat of the vessel, as well as closing the severed extremity, but, unlike the ligature, it can be removed in a moment without further injury to the tissues by grasping the closed end in a dressing forceps and making traction in the line of its application. Thus, at the completion of an operation, should a vessel be deemed so small as not to require permanent ligation, it having become closed, the clamp can be slipped off as easily as one would remove a hæmostatic forceps."

Since my article just quoted was published I have devised, and by the skillful aid of Tiemann & Co., of New York, have perfected a combination instrument combining a tenaculum and clamp compressing forceps in one, whereby, through a simple maneuver (that of compressing the blades over the vessel), this latter is transfixed by the tenaculm and drawn up within the clamp, which, at the same instant, is firmly compressed about it. I would suggest that until the surgeon has thoroughly familiarized himself with the use of the clamp through clinical experience, he had better be contented with the less expensive instrument first described, which, while if often requires, as already explained, the aid of the operator's left hand in order to draw the vessel out from the tissues, yet it requires no practice in order to make use of it. I have found my newer device, however, invaluble as a saving of time, besides being indispensable in the compression of vessels in situations where they are so deeply imbedded and ill lighted as to be inaccessible to more than one instrument at a time. Where one or more intelligent assistants are present I find the rapidity with which an operation is completed greatly facilitated by having, as already stated, several pairs of forceps at hand kept constantly "threaded," so to speak, with clamps, so that all I have to do is to take them, when handed to me, and compress them upon each vessel as it is severed, just as I formerly did my hæmostatic forceps.

Aluminum clamps become embedded, more properly speaking than encysted, within the tissues, their unirritating nature, for they are

non-corrosive and of the same specific gravity as the blood, taking from them the usual objections to a foreign body. As will be seen from a few selected cases which I have appended, the clamps have been made us of in almost every form of surgical procedure, even having been left within the pelvic and abdominal cavities without producing any untoward results.

To recapitulate briefly the chief points of superiority possessed by the clamp over the ligature, are as follows:

(1) Their great rapidity of application enables the surgeon to apply them almost as quickly as he formerly did his hæmostatics, while no subsequent steps are required, as would be the case should its application have to be followed by ligature.

(2) It never slips from the end of the vessel, either during or after its application.

(3) Once applied it will remain in position indefinitely, its inherent non-corrosive property, smoothness and lightness reducing its power of irritating the tissues to a minimum, while it cannot become a nidus for germs.

(4) The operator does not require the aid of an assistant to make traction upon the vessel as he would if ligating.

(5) The clamp can be applied to vessels in the deepest recesses of a narrow wound, where there is no room to introduce, tie and make traction upon a thread.

(6) It is aseptic and were it not so it is easily sterilized by heat in a few minutes.

(7) And last but not least, by its means we do away with the necessity of a multitude of hæmostatic forceps hanging in our way while operating.

The following cases are taken as exemplifying the situations in which it can with propriety be used:

Case I: Chas. T., aged 50, operated upon December 13, 1895. He was brought to my hospital with a limb which had been crushed severely between two logs more than twenty-four hours before. I amputated three inches above the knee, mortification having commenced below the knee. An aluminum clamp was placed on the femoral artery, as soon as it was severed. Before closing the flaps it was observed that the tissues about the vessel were seriously pulpified, the clamp was therefore removed (and I should state that these clamps can be removed instantly, without laceration of the tissues, by grasping them at the closed extremity with a pair of dressing forceps and making traction in the line of application), and a new clamp was applied higher up, where the tissues were firmer. Three or four smaller vessels also required clamping. The flaps were then coaptated and sutured in the usual manner. Primary union occurred despite the tumified condition of the tissues. No setbacks were encountered and within two weeks the patient was about on crutches. I saw him ten days ago and he informed me that he had been going about on an improvised peg-leg. The stump was an excellent one and no signs could be detected of the clamps having produced irritation. The time of the operation was shortened by at least one-third through the superior applicability of the clamp over the usual ligature.

Case II: John B., operated December 10, 1895. Large abscess cavity in the gluteal region, due, probably, to tubercular disease. While curetting the cavity, which was deep and narrow, extending to sacrum, I ruptured a vessel at its base. Here I made use of two of my clamps, one for each severed extremity. They were applied with the greatest ease, while, had I attempted to use the ligature, it would have been next to impossible, at so great a depth, without enlarging the external wound.

Case III: Ernest A., operated November 4, 1895, for radical cure of hernia (modified Barker's operation). Here all vessels encountered, large and small, were clamped as soon as cut. There were, if I remember, seven. All the clamps became encysted without causing the slightest apparent irritation. I have seen the case recently and while several of the clamps which were directly under the skin can be felt like little rice kernels, pressure upon them does not cause any pain.

Case IV: Charles F., operated March 27, 1896. Here I removed the left testicle for carcinoma. I clamped the vessels of the cord with three aluminum clamps. The wound healed rapidly without suppuration. No pain or discomfort has been occasioned by the clamps, which are, of course, out of reach within the canal.

Case V: Mrs. Gust L., oörphorcetomy, operated upon March 23, 1896. In this case I used clamps for controlling the hemorrhage from the ovarian artery on both sides, where they proved entirely satisfactory. Finding, however, considerable oozing from the minute vessels supplying the tubes and a few smaller ovarian branches, and as time pressed, there being many adhesion to break up, I was forced afterward to include all within a silk ligature. I was not obliged, however, to use the customary tension, which necessarily tends to devitalization of the stump, the minuter vessels only requiring the pressure by ligature, the ovarian artery, as already stated, being firmly compressed by means of the clamps. I returned the stumps into the cavity of the abdomen without removing the clamps. Recovery was excellent and rapid without raise of temperature. I have thus far seen no reason to regret having left the clamps in position.

RAILWAY NEURASTHENIA.*

By Thomas Osmond Summers, M. A., M. D., F. S. Sc., London.

Editor St. Louis Clinique, and Professor Anatomy and Histology, College of Physicians and Surgeons, St. Louis.

Occupation means the environment of organic metabolism—that upon which all structural development depends. We must all admit that we become under development just what environing influences determine. Even the strictest of the orthodox agree that character itself is under the influence of conditions. A fortiori, how greatly must the physical organism, the great medium of mental expression, the photograph of the ego, to speak in modern parlance, receive impress from its surroundings, and in its development express the result of its environment.

Bernardino Ramazzini, of the University of Padua, in the first year of the eighteenth century, wrote a work in Latin, entitled De Morbis Artificum Diatriba, and it is somewhat singular that in referring to this work Dr. James Henrie Lloyd of Philadelphia has expressed exactly the ideas of the author of this paper, so far as to criticise the work as desultory, digressive and pedantic—painfully pedantic—as Dr. Lloyd well remarks. But, as has been well said, he is to be "commemorated as the first physician who saw this great subject as a whole, and attempted to treat it in a systematic way." We shall not take up the time of this body in historical references, however; we are after facts; not who made or developed the facts.

In entering upon the discussion, therefore, of diseases which arise from occupations, we are met by the necessity, as indeed in all practical issues, of defining the subject. What do you mean by a "disease of occupation?" It would be absurd to ascribe under this nomenclature every disease that might affect an individual devoted to any special pursuit. The ordinary diseases of humanity may affect all artisans or professional men alike, and yet there are conditions which determine pathological relations and focalize those influences upon the organism in action, which disturb its balance and even superinduce permanent disease. Aside from the daily occupations which make up the ongoings of humanity, we are called upon also to differentiate between the pathological effects of latitude, surroundings, etc., and yet we are bound to admit that there are diseases which, however possible in all conditions of race, clime or other environment, nevertheless, are precipitated, if not indeed originated, by the character of occupation in which the individual may be engaged. For instance, it is well known that mining favors rheumatism; silk weaving, tuberculosis; file making tends to produce lead poisoning; gilding brings on mercurial poisoning when the ventilation of the workroom is deficient; constant writing, paralysis; wool sorting, anthrax; and a most signal example of the effect of the steady pursuit of a special occupation was shown right here in St. Louis at the time the caissons were sunk for the building of our great bridge, which stands to-day as a model of modern engineering unsurpassed in all the land. When we are daily brought in contact with men who occupy those positions which expose them to pathological effects or conditions which are entirely due to their occupation, it behooves us to condone many of those incivilities which are the outcome of a morbid strain upon the organism, since a sana mens, as all must admit, cannot exist except in sano corpore. It would be impossible in the limits of this paper to even enumerate the causes incident to special conditions, yet as a recent writer upon a subject germane to this has remarked, there is a temptation to carry out this plan by many authors, the obvious facts that locality, race, age, customs, habits and country affect artisans quite as much, even more, than do their occupations, are too readily ignored, e. g., the butchers of one town or race may be more healthy than those of another, although following identical occupations; or, as Altridge states, the cotton spinners of one mill may have a great advantage over those of another because they happen to work upon a special fabric for which there is a greater demand in the market, hence receiving steadier wages and leading healthier and more secure lives. While statistics are worthy of most careful and respectful consideration, nevertheless, they fail to establish a principle of scientific accuracy in conditions so variable as these which form the subject of discussion in this paper. We shall, therefore, pass them by, and

*Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May 1, 1896.

reach at once the salient or rather the practical issues involved.

Among all the various occupations which are necessary to the conditions of civilized life there is none which makes such a draft upon the vital energy of the organism as railway service. This arises from four causes incident to this line of life.

1. Rapid and constant transit.
2. "Rattle of the Rail."
3. Irregularity of diet and the ordinary life habitudes.
4. The worry incident to the calling.

I. Rapid and Constant Transit.—This acts in two general ways to bring about pathological conditions:

a. The constant and sudden change of climate made necessary by the very rapid movements of our modern railway trains could not but produce a vibratory effect upon organisms subjected daily to it. It is no uncommon sight to see a train covered with snow roll into lands of perennial bloom where snowflake never fell, and on the other hand to see a car decorated with palms and tropic flowers fresh in their beauty sweep through the icy forests of the North and lay their recent tributes at the foot of winter's throne. And yet this is not good hygiene—such changes shock the system. They must disturb the balance of the organism.

b. The change of nerve influences: A debt of eternal gratitude is due to Dr. Beard for his origination of the term Neurasthenia. No term ever introduced into medical nomenclature so completely fulfills all of the pathological expressions which are covered by its use. But we are preceding our limit of discussion and shall have to refer to this remark in our summing up of results.

II. "The Rattle of the Rail."—While the St. Louis Republic lays claim to this formulated alliteration we hardly believe that they fully appreciate from a practical, physiological and pathological standpoint the intense significance involved therein. There is always a continual quiver of the auditory filamentous spread. Of course you may say, "Well, a man becomes used to that!" Has the man who offers such reply ever considered the almost infinite changes—the necessary molecular adaptations to conform the organism which is perfectly interactional to the physiological plane? I cannot believe it if he has thoroughly covered the field of investigation involved. We remember once how seriously the roar of Niagara's cataract affected the nerve systems of tourists, especially bridal tourists. Now it may be the fact that such constant vibratory motion may affect the organism constitutionally, nevertheless we must admit that there are incidental influences which largely determine the character and ultimate expression of the disease. Aside from railway employes themselves who are subjected to all of these patho-neurotic conditions, there are also those who are compelled to be constantly upon the rail in commercial transit. Now it is very evident that this constant change of nutritive gauge—if we can speak thus ex medica cathedra—must necessitate an alteration in the normal functional expression of the organism.

Nothing is more sensitive to experimental test than the ultimate filaments of the optic and olfactory nerves, and a quiver in audation makes a disturbance in nutrition. So is it with all physical influences.

We could carry out this subject to an almost indefinite extent, but the limits of this paper before you forbids my discursive tendency.

III. Now comes the irregularity of diet and the ordinary life habitudes dependent upon railway environment.

It is hardly necessary to show to any modern traveler that the change of diet to which he is subjected in transitu, to say nothing of the character of substance incident to the change, must perforce produce profound and permanent impression. And it is always and ever the nerve centers that receive the impress. Under this influence the inhibitory nerves of the pneumo-gastric are the great formers and distributers of function. This we suggest as the key to unlock the pathological issues of such molecular disturbance.

IV. The Worry Incident to the Calling.—It is not a very strange fact that apart from specific diseases fatal in their character there are extraneous conditions, produced by irritable relations such as cannot be controlled by physical causes alone. We firmly believe that we state an axiomatic fact when we say that "worry kills more men than work." Work—Steady outdoor work under the clear open sky by the bright waters, under the conditions laid down for us by nature, is just as

much a necessity to the organism as nutrition itself. But let anyone consider the interminable, constant brain harrowing influences which press in upon the railway service, and he will feel that a master of modern motion is a martyr to modern methods.

This is not confined to the steam railway service alone; indeed in the street railway service of our great cities we are confronted with a tremendous shadow of neural death if you will permit such a license of methephoric expression.

I have often felt in my very heart an active sympathy for the thousand and one irritative influences which wear away the life of the conductor and the motorman like vultures feeding upon the lives of Prometheus bound to the everlasting rock. It is but necessary before a body of such intelligence to bring out these salient facts in a short and formulated manner as we have endeavored to do in this paper.

Now it remains to give the Hamlet of the play, i. e., the remedial agencies necessary to control or even modify the conditions set forth above.

Time would fail us to enter into the full therapeutic indication set forth in our fundamental principles, but there are, thanks to the ingenuity of pharmacal and chemical devotees —certain combinations so constructed as to enter without further digestive action distinctly into the several tissues of the body, supplying the waste without draft upon the normal cellular activity of the organism. I believe, yes, I even know, that these conditions have been met in the preparation called melachol, which not only contains the normal inorganic constituent of the wasting nerve organism, but also by its steady peristaltic action opens the pathway of excrementitious function.

We are in the very vestibule of physiologic temple. There is much yet of glory to be seen behind the veil—behind the veil.

Think of the thousands and tens of thousands of railway servants who are wearing out their lives upon the grindstone of greed! Think, too, of those who as passengers must suffer the constant roll and rattle and rumble of the railway rush in the mighty ongoings of modern commercial life. Well it is a fearful problem. We do believe that the time has come to look this important issue in the face and meet it with the stern facts of science.

As to the organic conditions developed by railway pathology, they are fully met by that almost perfect physiologic combination of nucleins—the very essence of physiologic principles—protonuclein, so peculiarly adapted to railway use.

DISCUSSION OF DR. SUMMER'S PAPER.

Dr. W. B. Outten: I expected to have heard the doctor touch upon railway spinal shock, but he has not done so. I want to say that while I appreciate very much what the doctor has said in his paper, if he were to say all those things to that gentleman who handles the lever, who sits on the box, he would turn around to Dr. Summers and say, "What in thunder are you talking about? Do you think I am green?" I have been in the railway service for years, and when I first started I was very eager to find a railway disease. I will give you my word of honor, that no man ever hunted for it more than myself, and I have not found one yet.

In the paper I read last year I gave the results of the study of a hundred and fifty-three thousand cases, and I believe Dr. Gant, who has since written a book on rectal surgery, went over these reports with me. They were compiled from the reports of the Missouri Pacific Hospital Department, and the only disease which could be said to be due to the occupation, was constipation, in consequence of irregularity of living, jolting of cars, etc. I think Dr. Adam Smith was the one who stated that about one-fourth or more of railroad engineers had diabetes. Out of one hundred and fifty-three thousand cases there were only one hundred and three cases of diabetes among these employes. I have searched for railroad kidney, but have never found one in my life that was really ascribable to the occupation of railway employes.

Dr. Cyrus Edson, who claims to cure consumption, wrote an article in which he stated that he had found railroad kidney, shortly after which I wrote 870 odd personal letters to the engineers on the Missouri Pacific system, and from the replies I received, I must unhesitatingly say that none of them had railroad kidney. In the number of years I have been engaged in railway surgery (since 1876), it has been my good fortune to mingle with employes in every position. I have sat with them at the bedside, held communion with them in every direction, where there was noth-

ing secret between us, and they were just as free to express themselves on any point as two railroad men can be. Picture to yourself the average man who runs on a railroad train, and you will find that all nature aids him to keep well. There is a continuous change of scene; there is that excitement which is healthful in itself, and when these men are sick we cannot ascribe the basis of their disease to their occupation.

President Murphy: After hearing the remarks of Dr. Outten, I am certainly justified in calling upon Dr. Patrick Henry Hoy to discuss this paper.

Dr. W. S. Hoy: I do not know how I came to be dubbed Patrick Henry Hoy. I do not know whether to blame Dr. Thorn or my friend Dr. Outten for it, but it is certainly a misnomer.

I desire to say one thing in regard to the paper, which was so beautifully and eloquently read for our gratification and pleasure. The speaker was away off in dreamland. I have made a special inquiry among the employes on the C. H. & D. system regarding railway kidney, and I have yet to see the first case in which a railroad man has Bright's disease of the kidney, or any acute disease of this organ as a result of his occupation. While Dr. Summer's language was beautiful, his theory was bad. There is not a railroad man to-day in this country who has any disease incident to the occupation which he follows. If fresh air, change of scene, change of occupation, mean anything, it is certainly for the good of the railway employes' health.

Dr. John Punton: I have listened with a great deal of interest to Dr. Summer's paper, part of which I can agree with, and part of which I cannot. I believe that there is such a thing as occupation neurosis. I am satisfied that there are conditions which dispose to nervous troubles, that are peculiar to men connected with railroads. I refer more especially to telegraph operators and clerks. A great many telegraph operators have writer's cramp, and so also do clerks. I have had occasion to treat quite a number of such cases and some were employes on the Missouri Pacific road, and I think their troubles were largely due to their occupation. Skepticism in regard to these nervous troubles sometimes is a sign of weakness, and I am inclined to think that when we sneer at conditions of neurasthenia, we are sneering at something which we do not fully understand. I am perfectly willing to take the doctor's idea of this subject, if he will accept his closing sentence, that "we must look this subject squarely in the face and meet it with scientific facts." I am willing to meet him on that ground. I believe that there is such a thing as neurasthenia, and that it can be met with facts of scientific importance. I think, also, that there is not only an honest, but an erroneous side to neurasthenia.

Dr. P. Daugherty: Dr. Outten spoke of constipation as being common to railway men and I agree with him. I have also found that engineers and firemen suffer from lumbago. It is an affection peculiar to them and to many other trainmen. I find more cases of lumbago, than of any other one disease. I have, therefore, put down lumbago as an affection peculiar to railroad men.

Dr. Emory Lanphear: I beg to call the attention of Dr. Outten and Dr. Hoy to a very recent report upon the condition of the motor nerves. Since the introduction of electricity as a motor force in street transportation, there has developed a peculiar neurasthenic condition in the men who have taken the place of the old drivers upon the slow-going street cars, and it is a nervousness which may very aptly be termed railway neurasthenia, because so far as investigations have gone, the affection is never found in any other occupation. This condition of neurasthenia is characterized by peculiar symptoms, the first noticed being insomnia. The motorman finds that he cannot sleep, and consults the surgeon of the street railroad for some remedy to overcome it. Not only is he affected with sleeplessness, but there is often a delicate tremor of the upper extremities. It is accounted for upon the theory of the intense nervous strain put upon the motorman as he oftentimes approaches the thickly populated parts of the city at a tremendous speed, where he is compelled to look upon one side for a time, then upon the other, for pedestrians in front or for obstacles in his way. All of these things taken together making such a strain upon the nervous systhem, that prostration of the nerves is the result, the first symptom being insomnia, and the second a nervous tremor. These cases have come to light within the last few months, and have been described as an intense nervous strain, which is to be met with in men of probably no other occupation. This is completely in the line of railway neurasthenia, the term being applied to them by a neurologist, who has already reported cases.

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CAR SANITATION AGAIN.

We have just received a reprint of the "Report of the Committee on Car Sanitation," presented at the meeting of the American Public Health Association at Buffalo in September last by Dr. Granville P. Conn, and deem its contents to be of sufficient interest for review at this time. Dr. Conn first called attention to the fact that the retrenchment and general economy necessary since the publication of the last report have made it impossible for the railways to make many changes or improvements not absolutely necessary, but he shows that the agitation of the subject has attracted the attention of railway managers and set them thinking of ways and means for the realization of better sanitary arrangements. Many letters have been received by Dr. Conn, as chairman of the committtee, from railway men, indorsing and commending the work and offering suggestions. In March last a circular letter containing the following questions was sent out to the management of different American railways, inviting discussion of the various propositions:

"1. Can passenger coaches of all classes be constructed in such a manner as to secure more satisfactory ventilation, heating, closet accommodation, and cleanliness than now obtains, without any considerable increase in the cost of construction?

"2. Do you have on your road any person educated in hygiene and sanitation, who can be held responsible for the sanitary condition of passenger coaches, or to whom the corps of car cleaners are held accountable for the strict performance of their duty? And in your opinion is it practical or good policy to have such a person?

"3. Do you believe a car cleaning department, organized under a person fully educated in such work, the same as the general freight or passenger agents should be in their respective bureaus, would increase the efficiency of the system, and with his experience, be able to coöperate with the superintendent of rolling stock, in giving information that might be incorporated into specifications to be observed in the construction of new coaches, thereby giving improved conditions without additional expense?

"4. It may not be practical to reject or set out passenger coaches coming from other roads, that are unclean, untidy, and unwholesome by reason of the filthy condition of closets, floors, etc., yet is it unreasonable to establish a system of sanitary inspection that would place the full responsibility of these conditions where it rightfully belongs, the same as is now done in cases of structural defects in rolling stock?"

A gratifying number of replies were received. The following from the general manager of the Grand Trunk lines is a fair sample: "To the Committee on Car Sanitation of the American Public Health Association:

"I have your favor of March 25, with pamphlet upon the subject of car sanitation, and, replying to the inquiries you make in the order they are named, will state:

1. The present system of ventilation obtained by means of sashes in the roof of the car, and by the opening of the doors and windows, fairly meets the requirements, having regard to the expense. I am afraid that the term 'ventilation' is too often held to cover the question of car temperature. There is no serious difficulty in properly ventilating a car and keeping it at an even temperature, if ice is used in the summer and warm air in the winter, but arrangements would have to be made to prevent the passengers from interfering with the inlets and outlets. Anyone who travels must notice what different views are held by the passengers as to what constitutes

good ventilation, and the problem to be solved is how to secure this in an inexpensive manner and without the admixture of dust. The problem can be solved, no doubt, with a not inconsiderable addition to the first cost of the car and with the cost of the necessary ice, and with intelligent manipulation.

"2. The employment of a person educated in hygiene and sanitation to see that cars are properly cleaned, may be considered a forward step Such duties are now performed by the foreman of the car department.

"3 I doubt if a car-cleaning department, organized as you suggest, would increase the efficiency of this system, while it would undoubtedly add quite largely to the expense.

"4. Conductors and car examiners report cars which are wanting in cleanliness, and upon their reports necessary action is taken to correct the trouble complained of.

"I may say that the desire on the part of all railway companies to in every way cater to the public welfare and thereby attract travel to their respective lines, will, even in the absence of specific laws on these matters, insure all the care and attention possible, so far as the sanitary condition of the equipment is concerned.

"Yours truly, CHARLES M. HAYS."

Commenting, Dr. Conn says:

"It should be a matter of congratulation to the public, to know that the railway managers of such through lines as the Grand Trunk Railway of Canada recognize the fact that to cater to the public welfare is to attract travel to their respective routes. Mr. Hays says that 'the absence of specific laws on these matters' does not matter, as everything will be done to insure care and all possible attention. This is a public spirit that should be emulated all over the country, for everything that pertains to the public health is for the public good, and it was long since demonstrated that 'public health is public wealth.'"

The report calls attention to the work of The Railway Surgeon along these lines, and quotes the circular letter sent out by the editor early this year and our summary of the answers received. An excellent paper by Dr. Domingo Orvananos, of the Superior Board of Health of Mexico, on the cleaning of passenger cars is published in full. He advocates extreme simplicity in the interior construction and furnishing of railway coaches, the doing away with all kinds of hangers and even carpets, and the frequent efficient disinfection of everything in the cars.

And this we believe to be the keynote of the whole subject. The interior of a car, it seems to us, could be made as attractive as the modern coach and as truly comfortable, and yet with smooth, impermeable walls and floor which could be thoroughly washed and disinfected if necessary. If the public demands upholstered seats they can at least be completely covered with smooth, washable covers, which should be changed daily. If a mattress can not be frequently renewed or cleansed it can certainly be covered with a separable cover which can be washed daily with the sheets and pillowslips, and we must insist that the blankets be washed as frequently as is done in our own homes. In the case of transportation of invalids additional precaution could easily be taken, and everything coming in contact with the patient disinfected at the end of the journey.

Antiseptic Uses of Formalin.

Dr. T. S. K. Morton stated that last spring and summer he had used formalin considerably, but found it to be too great an irritant to be used as a routine method. Bacteriologists are almost unanimous in praise of its germ-destroying qualities. It is, perhaps, the most powerful antiseptic we can employ. He had found that great dilution was necessary for injecting into cavities or putting upon the skin. It cuts the fingers of the surgeon in even weak solutions.

It seemed to act as a very powerful disinfectant upon ulcers or foul wounds. When it was sprayed upon such processes they would at once lose odor. The pain following application was sometimes severe while it lasted, and it would persist for hours occasionally. On these grounds he had been very reluctantly compelled to largely abandon the use of the agent.

The commercial product is formic aldehyde gas dissolved in water to the extent of 40 per cent. He found it very efficient in destroying epithelial growths, such as warts and superficial epitheliomata.

In regard to the use of formalin in the preparation of catgut, Dr. Frank Hartley, of New York, has abandoned it, after a careful study, because he found that formalin catgut showed a reduction in strength, as given by an accurate testing machine, of 50 per cent.

Dr. Hunter Robb has recently spoken very highly of formalin-catgut, and very ingeniously suggests that all prepared catgut be stored in culture media until required for use. If used out of culture medium showing no growth you are absolutely sure of the catgut being free from bacteria and spores.—Annals of Surgery.

proper corporate officers, superintendents, department masters, and others, whose duty it is to employ, superintend and direct the men in the machine shops and on the road; and that the employe be informed of these facts, and of the dangers which deafness brings to those placed under his professional care, to the corporation, and to himself. And the opinion was expressed, that you would do well to make certain suggestions which the corporation should adopt for its own protection,—such as the following:

All applicants for employment in the machine shops or on the road,—in consequence of whose deafness, loss of life, limb, or property might occur,—before being engaged, should be pronounced duly qualified by the aural surgeon of the company.

All candidates for promotion from the machine-shops, or elsewhere, to positions on the locomotive-engines; and from the position of locomotive-fireman to that of engineer, before receiving promotion, should be pronounced duly qualified by the aural surgeon.

All employes, in any position whatever, in consequence of whose deafness, loss of life, limb, or property might occur, should report at stated intervals to the aural surgeon for his examination.

If, on examination, deafness be found so profound as to otherwise endanger the life of the employe and that of others placed under his official care, he should be told thereof, warned, and, if necessary, be forthwith relieved from duty to undergo suitable treatment.

If, in the faithful discharge of his duty to the company, the employe become permanently disabled by deafness, he should not therefore be dismissed from the company's service to earn his daily bread, at the risk of his life and that of others, on some other road; but the company which he has so faithfully served, should consult its own best interests by pensioning him, or else providing remunerative employment for him in some other suitable position where no special danger will attend his deafness.

Lest the services of a qualified applicant or employe be lost, or an unqualified one engaged, the company should take the precaution to have these aural examinations properly made.

The plea was concluded with an exhortation to obey, in this matter, the official order that reads, "REMEMBER THE RULE THAT REQUIRES ALL EMPLOYES, IN ALL CASES OF DOUBT, TO TAKE THE SIDE OF SAFETY."

That paper seemed so far to express your own views as to have been deemed worthy of your own publication and distribution to every Railway Manager in the United States.

Some of the little seed thus widely sown by you seems to have fallen upon good ground, and has sprung up, bidding fair to bring forth fruit an hundred-fold. Many roads, as I have been credibly informed, now require as a qualification for service in their employ a certain degree of hearing power, under prescribed methods of testing. The assurance, by suitable tests, of the employe's hearing power, as essential to the more safe management of railroads then first proclaimed by your respected body has thus been practically acknowledged by Railway Managers--one more confirmation of the prophecy made before your association in 1891 by our esteemed Dr. Outten: "The officials of railway corporations will see the time has come when the physician will not only be an essential, but an economic factor in the operation of any railroad system." They have heard your voice; they have felt your influence; they have acted upon your advice. And as this is a just occasion for felicitation to you, may it stimulate you to speak once more to those who have shown their willingness to act, under guidance of your better judgment, in this matter,—to those who, recognizing the necessity of separating the grain from the chaff, but unskilled in the use of auditory tests, have begun to wield the flail to their own injury and greater danger! "Unqualified activity, of whatever kind," said the great German poet, "leads at last to bankruptcy." Recollect that you suggested this: "Lest the services of a qualified applicant or employes be lost, or an unqualified one engaged, the company should take the precaution to have these aural examinations properly made." How, then, can it take this precaution without your further guidance? It seems that your Association, as such, has not proclaimed its views in pursuit of this end.

Who could have heard unmoved the remarks of Doctors Hoy, Welch, and Outten upon the subject of the inefficacy of the

prevailing methods of testing the hearing of railway employes?

Right here, I beg to disclaim all desire to cast the slightest reflection upon any who approve of and cling to methods of whose disadvantages they have not yet been made sufficiently aware; but would rather direct your attention to certain features of the matter of testing the hearing, which, in my opinion, may be of practical value toward enabling you to solve this problem aright—for, until it is so solved, it will continue to vex all parties concerned. Of the desirability of the end, there is no question; of the means at present employed, there is certainly valid ground for question. And I make that statement for the following reason: If the prevailing methods of testing be such as to afford no guarantee against the loss of the services of a qualified applicant or employe, nor assurance of the rejection of an unqualified one, surely they are inefficacious, or inadequate. Now, such is indeed the fact. For, on careful study of the tests employed by the different railroads,—so far as I have been able to learn them,—I find that under any of them, you would reject one of the most reliable employes now in service if he applied for a similar position upon your road; that you would accept another, almost totally deaf without the artificial drum-head of cotton which he now wears with hearing beyond exception. Under the prevailing tests, you would have had to retire from service an engineer whose hearing was so impaired as to have rendered his ranking officer unduly, but, fortunately, unnecessarily anxious, who continues in service with safety. And I can cite you a case of a train-dispatcher whose deafness, until quite recently, has been unsuspected; who was relieved of duty at his own request; who can hardly hear a shouting voice a foot or two from either ear; who is wholly deaf to the tick of a forty-eight-inch watch on closest contact; but who claims to hear the "ticker" at his office, and the human voice—as I find—by lip-reading, so as to attend to his business without mistake or complaint. Again, if a skilled mechanic or engineer should apply for a position, you could not determine, with the prevailing methods of testing the hearing, whether his marked deafness, if such there be, is due to the usual accommodation of the healthy ear to his business conditions, or due to a dulling of the auditory perceptive apparatus from perhaps advanced but unsuspected Bright's-disease. With watch and voice tests, you could not distinguish. To do so, you would have to employ also at least tuning-forks. And if you should accept or reject such applicant upon these watch and voice tests alone, you would make either a most fortunate guess or a very serious blunder. Under the conditions imposed upon an ear in railroad service, it becomes modified in susceptibilty and structure, which disqualifies it for normal audition in ordinary quieter surroundings elsewhere. If the ear be perfectly healthy at the time of entering train service, and if no inflammatory action supervene, the functional modification is established slowly, and to a degree advantageous only to him as an employe, since his ear acquires power to resist the noxious influences of exposure, while retaining in its new circumstances ability to hear ordinary sounds—such as, for example, the human voice—a thing which here is beyond the power of an ear whose hearing is normal under other circumstances. This condition is so well defined in metal-hammerers, engineers, and mechanics generally, that it seems permissible to term an ear with such modified functions a "mechanic's-ear." An instance of this condition may be found among boiler-makers, who at work converse in an ordinary tone of voice, which is inaudible to another person present whose hearing is normal in ordinary quieter surroundings elsewhere. Perhaps a better illustration is this: if, in a quiet place, a remark in a low tone of voice be addressed to a rather deaf boiler-maker and yourself, you, and not he, will hear it; while if you both now go close to boiler-makers at work, a similar remark, made in the same low tone of voice, will be heard by him and not by you. Now, to distinguish a "mechanic's-ear" from one affected by disease, is impossible with the office tests by watch and voice alone; and as it is desirable, even essential, to make this distinction, or to determine just how far such changes in the hearing are advantageous, as arising from the adaptation to habitual environment and extraordinary duty, or disadvantageous, resulting from morbid processes, such tests as are necessary to determine this should be em-

may be provided, as under no circumstances will more than two persons be assigned to a section, thus assuring perfect comfort to all.

Delegates taking the special train will purchase railroad tickets from place of residence to City of Mexico and return at the rate of one fare, and purchase sleeping car tickets to nearest starting point of special train, either Chicago, Cincinnati or St. Louis. The special train starts as scheduled, and ample time should be allowed for making connections from local or connecting trains.

As the tour of Mexico will be under the guidance of Mr. Reau Campbell of the American Tourist Association, he will furnish the fullest information in detail, send maps, guide books, etc., if application is made to him at 925 Old Colony building, Chicago; also send name and address to Dr. H. L. E. Johnson, chairman transportation committee, 1402 L street, Washington, D. C., in order that he may make up an official list of the delegates and their party attending the congress from the United States.

Delegates may either live on the train and take their meals in dining car while in the City of Mexico, or they can secure rooms at the hotels for from $1.50 to $5 per day, Mexican money. Meals on the train or in the hotels are included in the price of the ticket; there are no extras whatsoever, except rooms at hotels.

Before reaching the City of Mexico the delegates should decide whether they will want rooms at hotels or will remain in the cars, that arrangements may be made ahead and rooms reserved.

AUXILIARY COMMITTEE ON TRANSPORTATION.

Dr. J. B. Murphy, 3152 Michigan avenue, Chicago, Ill.

Dr. Robt. Sattler, 14 E. Seventh street, Cincinnati, Ohio.

Dr. A. Walter Suiter, Herkimer, N. Y.

Dr. John B. Roberts, 1627 Walnut street, Philadelphia, Pa.

Dr. A. W. Calhoun, 62 Marietta street, Atlanta, Ga.

Dr. H. C. Eccles, Charlotte, N. C.

Dr. I. N. Love, 3642 Lindell boulevard, St. Louis, Mo.

Dr. Herman Mynter, 566 Delaware avenue, Buffalo, N. Y.

Dr. Robert T. Morris, 49 W. Thirty-ninth street, New York, N. Y.

Dr. R. Matas, 624 Gravier street, New Orleans, La.

Dr. L. Eliot, 1106 P street, Washington, D. C.

Dr. Hugh Taylor, 6 N. Fifth street, Richmond, Va.

Dr. G. Ben Johnston, 407 E. Grace street, Richmond, Va.

Dr. A. Morse, Eldora, Iowa.

Dr. Walter H. White, 222 Marlboro street, Boston, Mass.

Dr. Hugh Hamilton, 212 S. Second street, Harrisburg, Pa.

Dr. Bedford Brown, Alexandria, Va.

Dr. W. B. Atkinson, 1300 Pine street, Philadelphia, Pa.

H. L. E. JOHNSON, M. D.,
Chairman Committee on Transportation.

The C. M. & St. P. Railway Surgeons' Association.

The fourth annual meeting of the C. M. & St. P. Railway Surgical Association will be held at the Great Northern Hotel, Chicago, Nov. 12 and 13, 1896.

PROGRAM.

"Injuries of Bloodvessels," Dr. F. R. Garlock, Racine, Wis.

"Injuries of the Spine," Dr. D. M. Coal, Faribault, Minn.

"Rest as an important factor in the Management of Railway Injuries," Dr. G. F. Witter, Grand Rapids, Mich.

"Minor Surgery of the Hands and Feet," Dr. J. W. Kester, Block Earth, Wis.

"Injuries of the Hand," Dr. E. A. Plumbe, Rock Valley, Ia.

"A case of Mangled Hand with a Plea for the Abolition of Primary Amputation Therefor," Dr. Jos. A. Crowell, Iron Mountain, Mich.

"A Case of Conservative Surgery of the Hand," Dr. W. B. Johnson of Savanna.

"Drainage of the Surgical Operations," Dr. W. S. Caldwell, Freeport, Ill.

"The Ethical Relations of the Railway Surgeon," Dr. H. B. Hemenway, Evanston, Ill.

"Consultations," Dr. G. W. Johnson, Savanna, Ill.

"Expert Testimony in Suits for Damages," Dr. E. H. Townsend, New Lisbon, Wis.

"The Country Surgeon and Four Cases of Fractured Femur," Dr. E. J. Miller, Marion Junction, S. D.

"Means of Securing the Best Results in Traumatic Surgery," Dr. Hugh Jenkins, Preston, Ia.

"Some Observations on Different Modern Methods of Dressing Wounds," Dr. Henry F. Hoyt, St. Paul, Minn.

"Skin Grafting," Dr. E. D. Ladd, Milwaukee, Wis.

"A Case of Rupture of the Urethra with Treatment by Suture," Dr. J. F. H. Sugg, Clinton, Ia.

"Conservatism in Railway Surgery," Dr. Hugo Philler, Waukesha, Wis.

"Some Notes on Hip Dislocation," Dr. Allen Staples," Dubuque, Ia.

"Remarks Upon Fractures," Dr. Solen Marks, Milwaukee, Wis.

"Remarks on Active Treatment of Sprains," Dr. H. M. Brown, Milwaukee, Wis.

"Remarks on Injuries of Joints," Dr. J. A. Ballard, LaCrosse, Wis.

Title unannounced, Dr. William Mackie, Milwaukee, Wis.

Title unannounced, Dr. N. A. Drake, Kansas City, Mo.

"The Nursing of the Eye," Dr. C. D. Wescott, Chicago.

Iowa State Association of Railway Surgeons.

The third annual meeting of this association was held at Marshalltown, October 7 and 8, 1896, Dr. G. W. Coit, president, in the chair.

The following papers were read and discused:

"An Unusual Result from the Local Application of Iodoform," by Dr. O. Fordyce.

"Some Results of Railway Injuries," by Dr. D. S. Fairchild.

"Dislocation of the Clavicle," by Dr. J. W. Holland.

"Modern Treatment of Sprains of the Ankle-Joint," by Dr. J. C. Cottam.

"Railway Surgery as a Specialty," by Dr. H. C. Markham.

"Duties of Transportation Companies in Relation to the Development of Infectious Diseases," by Dr. J. N. Warren.

"Intestinal Obstruction," by Dr. W. E. Sanders.

"Restoration of Muscular Function After Injury," by Dr. V. B. Knott.

"Syme's Operation," by Dr. P. H. Salter.

"Reports of Two Cases of Skull Injury," Dr. V. L. Treynor.

"A Case of Trephining for Epilepsy," by Dr. A. B. Bowen.

"Minor Railway Injuries," by Dr. D. W. Edgar.

Twenty-six new members were admitted at this meeting. The following officers were elected for the ensuing year: Dr. D. S. Fairchild, Clinton, president; Dr. T. J. Caldwell, Adel, vice-president; Dr. A. A. Deering, Boone, secretary; Dr. H. L. Getz, Marshalltown, treasurer.

Des Moines was selected as the place for the next meeting. The Iowa State Medical Journal was made the official organ for the society for the year.

Fractures of the Cranial Vault.

Dr. Senn says that operative interference is absolutely indicated under the following circumstances: 1. All open fractures, including gunshot and punctured fractures. 2. Depressed fractures attended by well-defined symptoms, caused either by the depression or intracranial complications. 3. Rupture of the middle meningeal artery with or without fracture of the skull.

Extracts and Abstracts.

The Successful Removal of a Piece of Wood Imbedded Within the Brain Thirty-two Years, Without Impairment of the Cerebral Functions.

By Z. H. Evans, M. D., Traverse City, Michigan.

The subject of this clinical report is John R——, aged 57, late of Co. C. 180th Ohio Volunteers. The history, as related by the patient himself, is as follows: At the battle of Kingston, S. C., in June, 1862, he was acting in the capacity of gunner to one of the field-pieces, which had been detached from the regular battery to which he belonged. The gun had been run up nearly to the top of a small hill, upon which grew some small scrubby pines, with their branches trailing downward toward the ground, thus obstructing his view of the enemy. In order to overcome this obstacle it was necessary for him to cut them away with an ax. And while doing this the enemy let go a full charge of grape and canister, cutting down everything before it. The patient was struck with what he and the surgeon at the time supposed to be a bullet on the left side of the face, a little below and to the left of the right eye, making an ugly looking wound. This was immediately closed by the field surgeon in charge, and the patient sent to the rear. No inconvenience was experienced from this wound aside from some slight soreness, and at the end of a week he was able to report for duty, and continued to serve his country's cause until the expiration of his enlistment. On being discharged from the service he came to this state, where he commenced the clearing up of a new farm, working on it for years and years, not knowing or even suspecting that he was carrying around within his cranial cavity a foreign substance.

One year previous to his calling on me, while stowing away lumber in the hold of a barge, a plank slipped and fell endwise down the hatch, striking him on the face precisely over the region where he was formerly wounded. The injury inflicted by the falling of this plank caused some pain and swelling of the face, and in the course of two weeks there appeared an abscess, which was opened by Dr. King, then of this city, but now of California. After several weeks' treatment, and as the discharge of pus continued, his friends advised him to visit a neighboring city, where he could avail himself of the skill of a city surgeon. Acting upon this advice he, without delay, made ready and set out for Grand Rapids, which city can boast to-day of having more ready-made surgeons and gynecologists "within her

corporate limits" than any other city twice her size in population in this country. On arriving in this city of surgeons the patient fell into the hands of one whom I judge, from his diagnosis and treatment of this case, to have been entirely ignorant of its true character. In this day of our surgical civilization any physician or surgeon who is found so lacking in ability as to be unable to diagnose a sinus from a cancer, and sits by for days and weeks and applies his caustic paste cannot sufficiently be condemned. It was the fate of this old battle-scarred veteran to fall into the hands of one by whom this cauterizing process was carried on for weeks with unsurpassed energy, under the impression that he was burning out what he called a spider cancer of the face.

As he failed in his efforts to accomplish a cure, he finally advised the patient to return to his home in this city, as he could treat him there as well and with less expense. The patient, on arriving home, consulted me at my office on the 31st of May, 1894, and on examination of his face I saw at a glance that he was not suffering from cancer. On passing a probe I soon brought it in direct contact with dead and detached bone. Now, with the free use of cocaine I was able to scrape away with a sharp spoon all of this dead material, thus exposing and opening up the posterior ethmoidal cells, as well as the floor of the skull. This accomplished, the dura was exposed, which was much thickened, the result of the long continued inflammation. I now exerted some slight pressure with the tip of my finger on the presenting portion of the brain, and, much to my surprise, a little bloody pus was discharged through a small opening in the brain. I now passed a small probe into this opening some distance, when it came in contact with a hard substance. Now believing that I had a bullet to deal with, I took a pair of Péan's forceps, passed them into this opening and laid hold of this foreign body and drew it out. It proved to be a piece of pine wood measuring in length one and one-fourth inches, by one-third inch in thickness. On removing this body the flow of blood was fearful and could only be controlled by packing the opening in the brain with gauze. This tampon was allowed to remain in situ for twenty-four hours, when it was removed and the parts washed out with plain, clean water. I now inserted a small piece of gauze well into the wound for the purpose of securing free drainage. This method of treatment was carried on for several days, and finally the opening in the brain contracted and pus ceased to discharge. The soft parts were now brought together by means of adhesive plaster and within ten days the external wound had closed. Now comes a very peculiar point in the pathology of this case. Thirteen days after the removal of this piece of wood from the brain the patient, while sitting in a chair, was seized with paralysis, affecting the same side of the body from which it had been removed. The paralysis was not complete; he could walk by dragging his leg along, while his arm would swing by his side. His intellect was not disturbed; his speech was somewhat thickened, and he found it a difficult matter to express himself—to use his own language—the wrong word was always in his mouth. With this turn of affairs the patient began to look upon the dark side of life and expressed a desire to go and live with his brother in St. Louis. Since his departure from this city I have had no communication with him, although a friend of his has received a letter, in which he states that he has fully recovered the use of his limbs and desires to return to this city and engage in his former work.—International Journal of Surgery.

Silver as a Suture Material.

Dr. Credé of Dresden, before the last meeting of the German Surgical Congress, stated that, having visited the clinic of Dr. Halstead of Baltimore, his attention was called strongly to the qualities of silver as a suture material. The fact that his father had recommended silver nitrate as a preventive of ophthalmia neonatorum, also stimulated him to make experiments for the discovery of such silver salts as would best answer the purposes of antisepsis. He has found two salts which seem to fulfill the requirements in a remarkable manner. The first is a combination of silver with lactic acid, which dissolves in the tissue juices, forcing its way into the tissues roundabout, and as a result acting in a deleterious manner upon the bacteria that lie at a little distance. Silver lactate, called actol by the discoverer, has an antiseptic power equal to four or five times that of corrosive sublimate, but inasmuch as it irritates somewhat when introduced directly into the tissues and produces some pain in sensitive patients, another silver salt has been prepared—citrate of silver, known to the trade as itrol, which dissolves only in the proportion of 1 to 3800, and consequently acts even in small quantities for a long time. It is colorless, non-irritating, odorless, finely pulverized, permanent, and possesses evidently the same antiseptic power as the lactate of silver. Credé has used these salts for seven months in the surgical section of the Carola House, of Dresden. Four hundred bed-ridden patients and one thousand ambulatory cases have been treated therewith, so that he is able to affirm that the silver treatment has been sufficiently tried and in all essential points is worthy of professional trial. He uses the remedies for impregnating gauze

and suture materials as well as for powdering the skin about wound-edges. The itrol is especially useful for impregnating sutures, since it only acts when bacteria cause an increase in wound exudate which dissolves the silver salt. Upon decomposition the itrol acts as a strong antiseptic.

The Progress of Surgery.

At the recent meeting of the Missouri State Medical Society, Dr. Jabez N. Jackson of Kansas City read the report of the committee on "Progress of Surgery." It was chiefly an appeal in favor of conservatism and of fewer operations. There has undoubtedly been an excess of zeal, especially on the part of inexperienced operators; it has only too often been the object of the rash surgeon to merely prolong life—or even to obtain a desirable "specimen"—without due regard to the future of the patient. Every operator should have three things in view: (1) To save life. (2) To preserve function. (3) To conserve form. In brain surgery not as much is now being done as some two or three years ago; and it is better so, since incurable conditions were attacked by over-zealous enthusiasts; such operations have greatly advanced our knowledge of pathology, but have not proven of therapeutic value. In epilepsy it has been proven that excision of the cortex is of no benefit, except in a very few cases of the local or Jacksonian variety, and even here the resultant scar has often proven as bad as the original lesion in producing the epileptic seizures. But tumors having epilepsy as a symptom should be removed. Traumatic epilepsy should be prevented rather than cured, as late operations have not been followed by cure in as large percentage of cases as was hoped would be the result. In microcephalia operation is once more receiving attention, as it has been found that operation has a good disciplinary effect upon the parents or guardians of the idiots, and in this way considerable benefit is ultimately obtained; but it is doubtful if it is advisable except under unusual conditions. In abdominal surgery there have been entirely too many exploratory sections, by amateurs; such operations should be done only by the masters, and in cases of extreme doubt; the average surgeon should not enter the abdomen unless he knows exactly what the condition is and that he is capable of properly treating it after opening the belly. In fact, there are entirely too many attempting to do abdominal surgery; the time has now come to call a halt and to say emphatically that the ordinary doctor should not attempt to do any abdominal surgery excepting emergency work; chronic cases should be referred to the skilled specialist in surgery. In appendicitis there should be more medicine and less surgery, unless expert operators and experienced ones are at hand; but the tendency is perhaps just now a little too strong to drift back to the do-nothing plan; this also is extremely wrong—worse even that indiscriminate operating—and is to be combatted; the happy mean should here be the rule. Extirpation of the uterus also seems about to be carried to an extreme, especially in inflammatory disease which ought to yield to less radical measures; neither the uterus nor its appendages should be removed for pain alone; ovaries should not be removed save for gross lesions. Hysterectomy for fibroids is to be condemned unless the tumors are causing serious trouble or are liable to do so soon. Conservative, or at least non-mutilating operations upon the female pelvic organs are gaining ground—such as resection of the ovary, drainage instead of removal of diseased tubes, myomectomy rather than hysterectomy, vaginal drainage in pelvic abscess and some forms of extrauterine pregnancy, currettage instead of salpingectomy in chronic inflammatory but non-purulent disease, removal of an ovarian tumor without sacrifice of the ovary and tube, etc.; and they have much to commend them.—Medical Fortnightly.

The Strengthening and Sterilization of Catgut.

Dr. Donald B. Pritchard of Winona, Minn., writing to the Medical Record, says:

Having seen in some sample journal a two or three line item recommending the preparation of aseptic catgut by first treating it with formalin and then boiling, I thought it worth while to try it. Being much pleased with the result, it would seem but proper that I should bring it more generally to the notice of the profession. After trying various strengths of the formalin, I find the twenty per cent to be the most satisfactory, leaving the gut immersed in it for three and one-half hours. It should then be at once transferred to boiling water for fifteen minutes or longer, if one so desires, when it will be found in excellent condition. Raw gut that bears a weight of thirty pounds will after the formalin treatment lift twenty-six pounds, and boiling it for fifteen minutes does not weaken it. It is curious that the gut which has been prepared for several weeks seems to become nearly as strong as the original raw article.

If one wishes to boil it on spools, care should be taken to wind it very loosely, as it swells and contracts during boiling and might easily be broken. The better plan is to prepare it before winding on spools; then with aseptic hands it can be made ready for storing away in alcohol for future use.

One day I left some gut in the formalin for eight hours and found it rotten. It would lift but six pounds. After boiling for fifteen min-

utes I was surprised to find that it would bear a weight of sixteen pounds before breaking. So far as I can ascertain, twelve minutes is the longest time that bacteriologists consider that anthrax spores can resist boiling water. Surely, then, fifteen minutes' boiling ought in every instance to render catgut sterile.

Fracture of Skull; Prolonged Unconsciousness, With Probable Laceration of Brain.

The following interesting case is reported by Dr. H. Morell of Slayton, Minn.:

On April 27, 1895, G. N., aged 13 years, a large, strong boy for his age, while riding was thrown from a horse, and it is supposed that the animal rolled on him. He was carried to my surgery about half an hour after the receipt of the injury, in an unconscious condition. The pupils were equal, there was hemorrhage from the nose, breathing was easy and pulse 130. The forehead was bruised and was swelling rapidly; nose and upper lip contused. He was sent to his home on a stretcher, where he was undressed and wrapped in warm blankets, his head shaved, and ice applied, with warmth to the feet. He lay in a semi-unconscious condition all day, passing water involuntarily. He did not speak when spoken to, but if roused would seem to understand. He vomited four or five times.

April 28: Patient's condition practically unchanged. Examination of the head showed no depression. From the severe bruise on the forehead, he seemed to have fallen directly on the frontal bone on the left side. Another physician was called in, who agreed with me that bleeding was indicated, and it was done to the extent of sixteen ounces, from the right arm. After this there was marked improvement; the pulse was softer, and he answered a couple of questions in monosyllables. The pupils were equal and reacted to light. At this stage another surgeon was called, who approved of the treatment but gave a dubious prognosis.

April 29: Patient still unconscious. The bladder was emptied, as he had not passed urine for some time. The integument over the eyes was puffy and extravasation of blood beneath the conjunctiva well marked. At 2 p. m. he seemed more conscious and opened his eyes occasionally; pulse 74; respiration 20; temperature not taken. At 5 p. m. he was restless; injection into the bowel was given, which was followed by a movement. Cracked ice was given and relished.

April 30: Condition improved. He seemed to take more notice of his surroundings; took nourishment well, as beef-tea and iced milk; rested better than since the injury.

May 1: Took nourishment well, as beef tea and iced milk; rested well; seemed to understand what was said to him, but would not answer questions.

May 2 and 3: Condition the same; no improvement.

On the 5th 2½ grains of calomel were given; in the evening the bowels moved, after an injection. Patient seemed conscious; opened his eyes, but would not speak.

May 20: Up to this date the patient had gained physically every day, but mentally there was not much improvement. Sometimes when spoken to he would answer very slowly, then immediately cry.

His parents took him to St. Paul for two or three days, and when he returned the change in his mental condition was remarkable. He seemed as well as ever he was. Up to the present time, nearly a year, he has been perfectly healthy mentally and physically.

The above is an interesting case from a clinical point of view. In my mind there is no doubt that this patient suffered from a superficial laceration of some of the frontal lobes of the brain. Authorities maintain that in those cases where consciousness is delayed over twelve hours there is more or less bruising and laceration of the cerebral substance. It is plain that the laceration occurred exactly at a point underneath the point where the frontal bone was struck, i. e., the orbital plate of the frontal bone; at the same time, possibly, the ethmoid and sphenoid bones were fractured. The bleeding from the nose and ecchymosis of the lids seemed to confirm this. The aphasia also seems to show that the lesion was in that region, pointing to the inferior frontal convolution of the left side. Again: cerebral irritation usually follows blows on the forehead, temple or occiput, the symptoms of which were so well marked during this patient's illness, as great restlessness, eyelids firmly closed, irritability of mind shown by frowning when spoken to in a loud voice, and when convalescent crying at the least provocation.—Medicine.

The Illinois Steel Company has constructed a very complete and elaborate hospital at their South Chicago works, that will accommodate about fifty patients. In its construction the most modern ideas have been embodied and it stands to-day as probably the most satisfactory building of the sort in this or any other country, its purpose being to meet the emergency cases that arise among the thousands of operatives in this enormous plant. It is under the immediate care of Dr. James Burry as chief surgeon for the company, and an able staff of assistants. It was opened October 5 and a very pleasant opportunity was afforded a number of medical gentlemen of Chicago to see the building. They were particularly struck with its novel heating and laundry apparatus.

Notices and Reviews.

"A Treatise on Appendicitis," by John B. Deaver, M. D., surgeon of the German Hospital, Philadelphia. 32 full-page plates and other illustrations. Philadelphia: P. Blakiston, Son & Co., 1896.

A new work on appendicitis at this time is received with open arms, so to speak, by the medical profession. There is no disease which is claiming more attention at the present time and which is fraught with more serious dangers, and, withal, is so erratic in its course, as the one presented in this book. Every practitioner has felt the want of a clear, concise, systematic treatise on this subject, and I suppose that each of us have formed a mental opinion of what such a book should contain. The author of this volume has treated over five hundred cases of appendicitis, upon which clinical experience he bases the opinions expressed in his book. Such a large experience, should, indeed, place a man of Dr. Deaver's close observation and faithful devotion to details in a position to teach all of us something, if not much, about this varied and dangerous condition.

While it is really a pleasure to read the book, and I think one derives considerable benefit from the perusing of the various pages and from the study of the numerous illustrations, we are impressed with the fact that the work is particularly free from argument and that the author simply states his position, leaving the reader to accept it without any reasoning on his part. In a book pretending to be a treatise on such an important subject, and one concerning which there are so many different views, it would appear to the student of the subject that an author should give us argument, and where justifiable, conclusions. A careful study of five hundred cases should have enabled the author to give us some very valuable data in support of the conclusions which he has stated.

Dr. Deaver is known as an advocate of early operative treatment of this condition, but unfortunately this book does not convince us that such a course is always the best one to pursue. We need a great deal of light on this subject, and the sooner our writers give us the detailed results of their observation, the earlier we will be in a position to arrive at safe conclusions. A mere statement of conclusions at this time is not warranted by all of the facts thus far presented.

The great questions of when to operate and the relative advantages of early and late operations, the mortality of non-operative cases and the dangers of recurrence, are still open for discussion, and there are others upon which we not only need light, but also safe and definite conclusions. While it is true that this book will serve as an addition to our literature on the subject, it must not be considered as a complete treatise carrying with it the authority of the present knowledge of the subject, but rather the opinions of a single surgeon. Most operators will take serious exceptions with the author concerning the advisability of the invariable removal of the appendix in all cases of appendicular abscess, even in skilled hands. There can be no question but that the subsequent removal under aseptic conditions will enhance the patient's chance for recovery.

As a product of the printer's art this book is certainly to be admired. The colored illustrations are, however, too highly tinted and present an exaggerated appearance, which is detrimental rather than beneficial, and the index is entirely inadequate. While we are somewhat disappointed in the book, as a whole there are numerous features presented which will make it a valuable work to the student of this subject and worthy of a place in every physician's library.

A Manual of Anatomy, by Irving S. Hayes, Ph. B., M. D., Adjunct Professor and Demonstrator of Anatomy in the Medical Department of the New York University, etc. With 134 half-tone illustrations and 42 diagrams. Philadelphia: W. B. Saunders, 1896. 12 mo. Price, $2.50

A new work on anatomy is always received with a great deal of interest, since it is generally supposed that we have all of the facts of descriptive anatomy, as presented in our old standard Gray, and that whatever merits a new book may claim must be in the nature of a new method of presenting the facts, or in new means of illustrating and fixing the same upon the student's mind. This manual is no competitor of Gray's Anatomy, nor, on the other hand, is it to be classed with the small quiz compends which are decidedly more numerous than useful.

The principal feature of this book is the taking up of the subjects from a topo-

graphical standpoint and describing the various viscera and structures in the order in which they are exposed in a dissection. While the consideration of various structures of the body systematically is necessary for the freshman student, in order that he may gain a complete knowledge of the various systems of the body, the plan of presenting all the structures in a collected manner is by far the best one for the more advanced student and especially for practitioners of medicine and surgery. In this respect this manual partakes more of the nature of a dissector.

The plan of illustrations is entirely new, and while the numerous half-tones give one a splendid idea of the appearance in the cadaver, there is not as much contrast between the tissues as we find in the living subject. On the whole, the illustrations are not only original, but also new as to the scope of the various regions presented. The illustrations are unfortunately printed in black only, but notwithstanding the absence of contrast they do illustrate. Some slight coloring would have very materially increased the value of many of the cuts. The diagrams are new and in some instances quite unique. The relation of the viscera to each other and the exterior of the body is given special prominence, and in this respect this book excels all others with which we are acquainted. The descriptions of the bones and joints have been purposely omitted, which we think very proper in a work of this sort.

The index is very complete, occupying thirty pages. As a whole, we believe this work to be really a valuable addition to our list of useful anatomical books and we most heartily commend it to practitioners as well as students.

A. I. B.

When Shall We Trephine?

(1) In any fracture of the skull, either simple or compound, when there are symptoms of intracranial mischief. (2) If there is much localized depression, indicating the probability of either immediate or remote consequences. (3) In all cases of punctured fracture. (4) For the removal of foreign bodies. (5) In cases of compression of the brain from blood, pus, or tumor, when the offending cause can be located with a reasonable degree of certainty. (6) In cases of epilepsy, when the traces of the injury originating the disease can be recognized.—Buechner, International Journal of Surgery, May, 1896.

Sir Spencer Wells' Successor.

The Queen of England has appointed Mr. Rickman John Godlie, F.R.C.S., Surgeon to the Household in Ordinary to Her Majesty, in place of Sir Spencer Wells, resigned.

Fracture of Patella.

Dr. Geo. R. Fowler's method consists in exposing the fragments of an intermediate procedure, i. e., after the immediate effects of the injury have subsided and before ligamentous union has occurred, for the purpose of clearing their surfaces of intervening soft parts, and the application of fixation hooks resembling Malgaigne's, though a single and not a double pair is employed. The incision is made either vertically, transversely, or U-shaped, as indicated, and the hooks are inserted in the line of incision when possible, to avoid separate skin wounds. After carefully removing everything from between the fragments and applying hooks, the parts are stitched with subcuticular silk suture, sterile gauze and cotton are applied, and the limbs are enveloped in plaster-of-paris splints for three weeks, at which time the hooks are removed.—Medical Record.

BOOKS AND PAMPHLETS RECEIVED.

"Tumor of the Cerebellum," by Sanger Brown, M. D. Reprinted from the North American Practitioner, September, 1896.

"Adenoid Vegetations; the Anæsthetics, the Instruments, the Operations; with Special Reference to Operation under Bromide of Ethyl Anæsthesia," by T. Melville Hardie, M. D. Reprinted from Annals of Ophthalmology and Otology, July, 1896.

"Electrolysis for the Reduction of Spurs of the Nasal Septum," by W. E. Casselberry, M. D. Reprinted from the Journal of the American Medical Association, September 12, 1896.

"Intubation in the Adult," by W. E. Casselberry, M. D. Reprinted from the New York Medical Journal for September 5, 1896.

"Diagnosis and Treatment of Laryngeal Diphtheria," by W. E. Casselberry, M. D. Reprinted from the North American Practitioner.

"A System of Retaining and Recording Anthropological Data," by William G. Stearns, M. D. Reprinted from the American Journal of Insanity for October, 1896.

Dr. A. C. Abbott, hitherto first assistant, has been elected professor of hygiene in the University of Pennsylvania, in succession to Dr. John S. Billings, resigned.

The Railway Surgeon

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RELATION BETWEEN THE CLAIM DEPARTMENT AND THE SURGEON, WITH ESPECIAL REFERENCE TO THE VIRTUE OF COMPROMISE AS COMPARED WITH LITIGATION.*

BY W. B. OUTTEN, M. D., ST. LOUIS, MO.

We believe with Thoreau, "Duty is one and invariable, requires no impossibilities, nor can it ever be disregarded with impunity."

The true line of duty of the railway surgeon is essentially the same as that of any other honorable man. He should be employed for his true capacity and ability as a surgeon, for this is the cause and the criterion of his merit. The truer the railway surgeon fulfills his vocation as a physician and surgeon, the better, broader and more efficient becomes his service. In the perfection of his knowledge of medicine lies this merit. It can be safely maintained that if his knowledge of medicine is requisite to meet all demands, it can only tend in the direction of science and truth. He should never under any circumstance attempt to occupy a dual position, but preserve unceasingly an honorable, upright individuality as a surgeon and as a man, nothing more. When he essays the function of claim agent or attorney, he ceases to be a surgeon and assumes a function which the nature of his business and training do not fit him for. He can at all times best serve the corporation by which he is employed in the most effective and comprehensive manner by maintaining the just, the true, the honorable. Any service which demands the loss of individuality, the use of falsehood, or dishonest method, will in time engulf and destroy anyone employed in that service. Our actions are not only the formative element of the aggregate of our character, but most frequently the deter-

*Read at the annual meeting of the Association of Railway Claim Agents at Pittsburg, June, 1896.

mining factor of our success and happiness. Actions make results and are often not only indelibly pressed upon an individuality, but upon a community or nation as well. The full force of trust and respect only lie in honesty and truth, but there seems to be no limit to the distrust and loss of respect when the reverse is the case. The railway surgeon should never permit his prejudice to thwart his judgment. Partisanship in his position soon leads, not only to loss of respect upon the part of his employer, but of all with whom he may be brought in contact. He should avoid falsehood, prejudice and partisanship; avoid falsehood, because it is the subterfuge of cowards, fools and villains. Prejudice is a fungus-growth causing mental deception and always thrives best in partisanship—the jaundiced realm of reason. He should be faithful, sincere, honest and earnest. Faithful, because of the belief in right; sincere, because sincerity is the very soul of conscientiousness; honest, because it is the only true, straight, easily defensible line of action; earnest, as earnestness combines patience and endurance and strength. A truthful, competent, honest railway surgeon is ever a prime, economical factor in railway management. The reverse, a misleading extravagance. The full force of insinuative, plausible and combative circumstances continuously surround the position of the railway surgeon. It requires judgment, honesty and assertiveness to maintain an upright individuality. It has been very truly said that, "A good character is in all cases the fruit of personal exertion. It is not inherited from parents, it is not created by external advantages, it is no necessary appendage of birth, wealth or station, but is the result of our own endeavors." The railway surgeon's duty is at times fourfold. His duty to himself, to his patient, to his employer and to the community. If he is true to the first two duties, the two last will never suffer. The railway surgeon's duty then is one and invariable; hence it can never lean in the direction of crime, neglect or falsehood, but only in that direction which honest function demands and carries in its very core the golden rule of action. Nothing in the shape of an organization needs and appreciates truth more than a railway corporation. The most effective and successful executive in any management has made more of a success by the use of his knowledge of a true and honest man than he has by too deep a study of the rascality and duplicity of the dishonest. This may sound like balderdash, but investigation will verify this assertion; a knowledge of whom to trust is pre-eminently the basis of all executive work and management which bears the stamp of success. "Rem acu tetigesti" truth, when it is said that all competent and discerning men prefer honesty, with its efficiency and certainty of action, to dishonesty, with its doubtfulness and equivocality. From the standpoint of expediency, if no higher motive is suggested, truth and honesty give more complete and perfect comfort to existence than the reverse. It may be true that nothing is impossible, but we maintain that the successful hiding of a lie in the guise of truth has been an impossible task to the most brilliant intellect ever created. Honesty is almost consequently associated with good sense and judgment. Dishonesty is in a great many instances the result of defective mentality. There is nothing, as a general thing, impossible in the performance of duty; but a duty neglected may partake of fraud, dishonesty and criminality. The true line of duty of the railway surgeon, then, must consist in honest, effective knowledge of his function, along with the true, exact and strict performance of the same. Experience and result have taught millions before us and will teach millions yet to come—that duty, honesty and truth are forces which most broadly and constantly rule the intellect of man, and that the highest success and happiness in life comes through their effects and practice. The relationship which should exist between the railway surgeon and the railway claim agent is pertinently expressed in this assertion: That truth should be the object of their understanding and there need never be any abrogation of truth. The position of a claim agent upon a railway is by every element constituted an honorable position, and as such, can be constantly maintained. An effective claim agent must of necessity be an intelligent man of rectitude and deep conviction. He can at all times honorably maintain his function and is never called on to assume unmanly function, nor assume the role of detective or brow-beater. The surgeon's line of work is entirely in the domain of the humane; in plying the true nature of his vocation, he is of constant assistance to the claim agent, as he truthfully gives a clear and honest statement of the physical condition of

the claimant. In so doing he prepares the claim agent for every contingent in the evolution of the case, and thus never misleads. The claim agent is pre-eminently an agent of compromise; adverse conditions constantly make compromise a virtue. Compromise stands in relation to personal injuries upon the railway and litigation as prevention and cure. A case compromised saves a thousand elements of attendant worry upon the part of the claimant and a large expense upon the part of the railway. It is the best and most economical element for all concerned in personal injury cases, just as prevention in disease saves time, pain and ulterior consequences; while litigation involves every element of expense and is productive of mental disease and at time death. Honorable, just compromise should be encouraged whenever possible, with a desire to do strict justice. The field of compromise is one where honorable professional men rarely disagree, where dignity is maintained and a truthful, manly standard. Compromise will oftentimes permit a much nearer approach to strict justice than a court which necessarily permits the conflict of truth and falsehood, frequently to the exclusion of justice. Compromise offers to all concerned, the purest and best forms of economy; for the plaintiff, it takes away the sting of delay and irritating circumstance; for the corporation, it saves money and reputation. It is a well established fact that medical expert testimony, as used in litigation before the courts, has reached such a state as to be almost inaffective; it is certain that it is constantly unjust, not only to the plaintiff, but to the defendant as well. Certain it is that the respect accorded to the profession of medicine is not commensurate with its intelligence. The loss of individuality and the subserviency on the part of the medical expert is due in many cases to his relations to the party employing him and the adaptation of medical opinion to a theory built in law; be it true or not, it often prevents the procurement of unbiased opinion. This is pre-eminently true in cases of personal injuries occurring upon railways where an almost inherited prejudice enables the most ignorant quacks to give expert testimony. Possessing scarcely the elements of true medical education, these impostors are accorded credence equal to that given the most skillful of experts. So prevalent has this practice become that we have heard reputable lawyers say, that the railway, to be opposed in a legal trial, the ignorant medical witness will exert more influence over the average court and jury than the well-posted and honestly-inclined medical expert. It is not ignorance that has brought this deplorable condition about, of medical expert testimony, but duplicity, dishonesty and the ready adaptation of the medical expert to the views of the counsel. The lawyer, himself, rarely competent in his knowledge of medicine to make plain the learning, competency and proficiency of the genuine expert, is as equally certain to fail to detect the ignorance and utter incompetency of the ignorant expert. The value of the medical expert testimony should mainly depend upon the expert proficiency and learning in his profession; but this is very far from being the case in practice. Winthrop says: "Reform in the methods of using medical men as experts is a plant of slow growth. Suggestions and recommendations are offered in sufficient number and there the matter ends. English and American courts continue to follow traditional usages and show no willingness to find a better way. Each of the parties in a suit in litigation secures the services of medical witnesses favorable to him and leaves the witnesses to justify their testimony as well as they can. This being in accordance with the theoretical right of every person to call on behalf of his defense such witnesses as he sees fit."

The medical expert is supposed to have special knowledge, skill and experience in medicine. First it is not necessary according to the existing tenets of the law that the medical expert should have practiced his profession, neither does the law take cognizance of what particular school of medicine the expert belongs to. Secondly, "The extent of the previous study and investigation and the amount of skill and information which must be shown will depend upon the facts of each particular case. But some special and peculiar knowledge or skill must be established, the amount of it to be determined by the trial judge in his discretion. The possession of such knowledge and skill is presumed in medico-legal cases if the witness is a licensed practitioner."—Tracy C. Becker, Medical Jurisprudence, Forensic Medicine and Toxicology.

It is not relevant to the subject-matter of this paper to discuss the justice of the expert receiving other than the ordinary fee, but it is

held in some states that the expert does not stand upon the same footing as an ordinary witness. That he is in the position of imparting something of value, that his knowledge, skill and experience "is his property as much as any other thing movable or immovable of which he is possessed."—Becker. Under the practice of the courts of this country the expert is selected by the litigants. The amount of special and peculiar knowledge or skill of the expert is to be determined by the trial judge, and he is oftentimes a very good lawyer, but a very poorly informed person in a medico-legal way. The proof demanded does not generally bear the stamp of much profundity of thought, the statement of the qualification of the expert is usually made by the expert himself. He may qualify himself by proof of his legal right to practice the profession in which he is engaged, or by showing that he is conducting a business, a wide knowledge of which he should, but may not have. To testify as an expert there is usually no proof either offered or required as to fitness; generally the fact is accepted that the expert has been or is engaged in a business or profession which should give him the required knowledge and experience to qualify him. The question of his actual knowledge is left to be ascertained from his own answers on cross-examination. And as before stated, the possession of such knowledge and skill—in the medical expert—is presumed in medico-legal cases if the witness is a licensed practitioner. A legalized or licensed practitioner in our country, particularly in some western states, means merely a self-imposed or authorized prefix to a name to constitute a full-fledged physician.

I was once informed by a medical student who had failed to pass the final examination at a medical college that he was now a legal practitioner, that he had passed a satisfactory examination before a local board of examiners in a neighboring state. Upon inquiry I elicited the fact that the local or county board in the county in which he was practicing consisted of a blacksmith, a barkeeper and a justice of the peace and as our informant expressed it, that there was "not much medicine in the crowd, but a good deal of muscle and whisky."

When you take into consideration the ineffectiveness of medical expert testimony, the injustice of litigation and the improbability of accomplishing normal and just results, certain it is that compromise possesses exalted virtues in comparison to litigation, and the claim agent is but an agent of compromise.

I cannot refrain from mentioning, at this juncture, the contributing elements of modern civilized life in generating mental conditions, and which, when brought in contact with the railway by an injury inflicted by it, the railway receives the entire brunt of condemnation, when the contributing elements are plainly and manifestly the cause of their existing form of life.

We will not endeavor to enter extensively into consideration of the elements supposed, which lead to a generation of diseased condition and the production of what is pre-eminently a condition of modern civilization. Nor will we at this juncture refer to the influence of the excessive use of narcotics and stimulants, such as alcoholic drinks, tobacco, opium, nor the absorption of tainted foods and organic poisons and to other conditions tending in this direction. But in order to make our meaning more plain, we will quote from Nordau, as regards the peculiar influences of modern life in the production of hysteria: "The enormous increase of hysteria in our day is partly due to the same causes as degeneracy, besides which there is one cause, much more general still than the growth of large towns, a cause which perhaps of itself would not be sufficient to bring about degeneracy, but which is unquestionably quite enough to produce hysteria and neurasthenia. This cause is the fatigue of the present generation. That hysteria is in reality a consequence of fatigue, Fere has conclusively demonstrated by convincing experiments. In a communication to the Biological Society of Paris, this distinguished investigator says: 'I have recently observed a certain number of facts, which have made apparent the analogy existing between fatigue and the chronic condition of the hysterical. One knows that among the hysterical involuntary symmetry of movements frequently shows itself in a very characteristic manner. I have proved that in normal subjects this same symmetry of movements is met with under the influence of fatigue. A phenomenon, which shows itself in a very marked way; in serious hysteria there is that peculiar excitability which demonstrates that the energy of the voluntary movements through peripheral stimulation or mental pre-

sentations suffers rapid and transitory modifications co-existing with parallel modifications of sensibility and of the functions of nutrition. This excitability can be equally manifested during fatigue. Fatigue constitutes a true temporary experimental hysteria. It establishes a transition between the states which we call normal and the various states which we designate hysteria. One can change a normal into an hysterical individual by tiring him. All these causes, which produce hysteria can, as far as the pathogenic part they play is concerned, be traced to one simple physiological process, viz., fatigue and depression of vitality.' Now to this cause, fatigue, which, according to Fere, changes health into hysteria, the whole of civilized humanity has been exposed for half a century. All its conditions of life have in this period of time experienced a revolution unexampled in the history of the world. Among the hysterical, and it must not be thought that these are met with exclusively, or even proponderently among females, for they are quite as often, perhaps oftener, found among males." * * * The leading characteristic of the hysterical, says Colin, "is the disproportion of impressionability of their psychic centers. They are above all things impressionable. From this primary peculiarity proceeds a second quite as remarkable and important, the exceeding ease with which they can be made to yield to suggestion. The early observers always mention the boundless mendacity of the hysterical, growing, indeed, quite indignant at it, and making it the most prominent mark of such patients. They were mistaken, the hysterical subject does not consciously lie, he believes in the truth of his craziest inventions. The morbid mobility of his mind, the excess of excitability of his imagination conveys to his consciousness all sorts of queer and senseless ideas. He suggests to himself that these ideas are founded on true perceptions and believes in the truth of his foolish invention, until a new suggestion. Added to this emotionalism and susceptibility to suggestion is a love of self, never met with in the same person, or anything like the same degree. The hysterical person owns that 'I' towers up before his inner vision and so completely fills his mental horizon that it conceals the whole of the remaining universe. He cannot endure that others should ignore him. He desires to be as important to his fellowmen as he is to himself; an incessant need pursues and governs the hysterical to busy those about them with themselves. The means of satisfying this need is the fabrication of stories, by which they become interested. Hence, comes the adventuresome occurrences, which often occupy the police and the reports of the daily press. In the busiest thoroughfare the hysterical person is set upon, robbed, maltreated and wounded, dragged to a different place and left to die; he picks himself up painfully and informs the police. He can show the wounds on his body. He gives all the details. And there is not a single word of truth in the whole story; it is all dreamt and imagined. He has himself inflicted his wounds in order for a short time to become the center of public attention, and if in a railway accident his tales are never probable, but always miraculously colored."

Now, then, hysteria is characterized by hyper-susceptibility to suggestion. He believes in everything suggested to him with sufficient impressiveness. The excited and the hysterical are never to be trusted; still their stories, when taken into account in personal injuries, are not only believed by the laity, but by the physician as well. It is, indeed, a marvel to what extent suggestion may go, particularly under excitable conditions. Nordau says: "Mede Goncourt relates that in 1870, during the Franco-Prussian war, a multitude of men, numbering tens of thousands in and before the Bourse in Paris, were convinced that they themselves had seen, and really part of them had read, a telegram announcing French victories fastened to a pillar inside the Exchange, and at which people were pointing their finger, but, as a matter of fact, it never existed. This is essentially the condition of a hysteric. They see, fell, hear and taste in suggestion."

These remarks are interpolated in this paper essentially for the reason that while it is absolutely necessary for the physician to understand this modern enigma of civilization, still we believe that it is pre-eminently necessary that you, as claim agents, should be at least informed of the fact of its peculiar action upon the mental condition of modern man engendered by the peculiarities of his growth, progress and civilization.

Before passing on, it may not be out of place to indicate the full force and effect of litigation upon the plaintiff in a law suit, as it will serve to give a strong and forcible reason why the

claim agent, in performing his function, can be enabled to lessen disease-producing circumstances. It is a well-established fact, particularly in a certain class of cases which are the most troublesome and the most expensive for the railway, and known by the name of railway shock to the spine; but happily now, owing to honest work, they have been relagated to other causes as well. Permit me here to cite from Herbert W. Page regarding the baneful influences of litigation and causes of chronic invalidism. It is a well established fact that among the sociological problems attendant upon modern civilization, the general bestowal of damages in this class of cases is a portentous and ominous threat as regards existing social conditions. It is recognized by all competent authority that the chance of money redress is now greater than ever before; hence we have an invariable tendency inherent in human nature when anyone is injured upon a railway to exaggerate every symptom and by a more or less voluntary auto-suggestion construct a case which never would have existed had not the railway inflicted it. In fact, it is a pure litigation trouble engendered by social conditions, particularly the prospective gain, created by the competency to pay, of the inflicting agent. Let us now quote Page: "And out of this very exaggeration arises another cause of prolongation of the illness. The exaggerated estimate of the symptoms themselves leads to an erroneous estimate of the present incapacity and to an increasing belief in the impossibility of future recovery and usefulness; hence it is only natural that differences of opinions arise between those who are entitled to receive compensation for the injuries and for the perspective consequences, and those who have provided and who take a wholly unsentimental view of the value of the patient's health and life. Months, perhaps, are thus wasted in disputing about the claim, or, worse than this, the man is drawn unwittingly into litigation and is subjected to the anxieties and worries which a lawsuit involves. What surer means than this for aggravating the symptoms. Is recovery possible under such an influence? Is there not, indeed, every likelihood that the symptoms will get worse and worse, or at best, undergo no change, and is it not more appropriate now to call them 'litigation symptoms' than those of general nervous shock? * * * Make all the allowance that may honestly be made for the special circumstances of terror attendant upon a railway collision (and I would not for a moment seek to lessen their real influence) and compare the state of one waiting for compensation, whom for the nonce, we will call a railway patient, with the state as nearly similar as may be of a hospital patient, who has no compensation to look forward to, and who has been compelled to resume his work as soon as he was able, and then see how different is their lot, and how infinitely less wretched is the one man than the other. The hospital patient has long ago been well, while the railway patient has been waiting for months, it may be, until compensation has been paid him, believing that he could not return to work and to a natural and more healthful mode of life. Settle your claim and get to work, is the best advice which can be given a man in these circumstances. Get to work and you will soon find you have the strength for it and will forget the gloomy prognostications of those who say that you can never tell what may happen after a railway accident, and that you ought to wait and see how things turn out."

We have often thought that if Erichsen, in his graphic and classical work on "Railway and Other Injuries of the Nervous System," had confined himself to clinical description, his work would have stood in the light which its merits deserve. But when he gave the details of the monetary consideration received in each case, he aroused the cupidity of the world, and he detracted from the pure, scientific character of his exposition. The damages awarded were enormous and before undreamed of. We read "the question of damages resolved itself, to a great extent, into one of loss of income and expense incurred." "The jury awarded £5,775, or the plaintiff recovered £6,000." In this country, owing to the example quoted, damages have been awarded in this class of cases as high as $49,000. From that time railway spine and railway brain became speculative troubles. Not a physician who was not impressed, dishonest ones not only supplied the legal side of the question with its medical data, but invariably pointed to the financial side. No medical book ever written has been more extensively read by the laity, and none, certainly, has ever been more closely studied. It has been the means, by its plain, graphic description, of educating more malingerers than any single book eminating from a professional mind.

It has been the foundation of compensation. If the baneful effects of compensation lead to the production of marked psychic anomalies, the story of rewards of damages, first detailed by Erichsen, plainly emphasized this factor and made it a disease-producing agent. In describing a new trouble Erichsen made operative a new influence, which, in its turn, is oftentimes more serious in its effects upon the psychic condition of the injured person, than traumatism itself.

We will not bore you by any more reference regarding either litigation or the creation of medical troubles through this means, but we desire to say that the great lacking element in the compromising of claims is the fact of a lack of closer harmony between the surgeon and the claim agent. This is particularly so in railways which have no organized medical service, or depend upon different medical examiners. We do not know of any more perfect arrangement in the compromising of claims than that at present existing in the hospital department, as at present established upon some railways of this country. They are the means of giving a continued experience, a close contact, a perfect understanding of claim agent and surgeon, and if there be any virtue in experience and familiarity with the multi-faced conditions surrounding the railway surgeon and claim agent, these are certainly engendered by hospital departments. With this assertion, we will then proceed to detail the benefits of a railway hospital department in the shape of compromise and the perfect settlement of claims.

The hospital departments possess the following advantages: First, they are the means of concentrating all the injured employes in the hospital of the department, and surrounding them with elements which are conducive not only to their physical, but to their mental welfare as well. Humanity and truth should constitute the basis of treatment in any hospital department, and it can be proven that they have been the means of mollifying and changing prejudices into calm, considerate and sensible action more than any other means which can be suggested. We do not believe that the concentration of all the injured employes into one place, as in a hospital, debars them from receiving injudicious and bad advice, or that it is a potent cause of preventing litigation, for sufficient liberty is always allowed for them to consult whom they desire. When frankness, honesty and truthfulness mark the treatment of the hospital physician to their patients, there is created a mutual confidence, which almost always leads to well-considered action. There is never any endeavor to deceive, but a plain discussion of conditions as they exist. The possibilities and probabilities of future capacity to work are all plainly considered and indicated. The employe truly knows that the claim agent of the railway company will endeavor to settle with him at the most favorable terms he possibly can, for he has been taught this by the experience of others; hence he expects nothing from this source, but a regular combat, all hinging upon the liability of the company in the infliction of his injury.

It is admitted that many consider that any person, in order to serve a railway company, must necessarily indulge in trickery and loss of individuality; yet from many years' experience we know that the reverse of this is true. None appreciates the integrity of any man more than the intelligent and competent railway manager. It has been our duty and pleasure to take injured railway employes to the claim agent and insist upon the employes listening to every statement made to the claim agent; nothing being left hidden or unstated, but a plain and truthful statement being made of facts indicating the extent of injury, the likelihood of permanent disability and any condition likely to arise in the future; even giving advice to the patient in the presence of the claim agent, that he had better not settle if at all uncertain as regards the future. When this has been done for years, there will be naturally engendered confidence upon the part of the employe from the fact that the previous experience of others indicated the honesty and truth of both claim and hospital department. Again, the union of the hospital department with the claim department of the railway enables the accumulation of a truthful history of any personal injury to employes, passengers and others. With the employe, this history extends from the inception of the injury along with a daily history until recovery, debarring dishonest persons from falsification or the substitution of origin in doubtful injuries.

Secondly, it relieves the railway company from paying doctors', board, drug, funeral and other bills in the treatment of the injured employes, as the hospital fund is always competent to pay these. That is, these hospital de-

partments are self-sustaining and the railway company need only supply transportation to and from hospital, and a proper auditing of hospital accounts. The treatment of passengers and outsiders is paid for by the company, but these departments, being well supplied with physicians, a complete history is always obtained as regards injuries, and by these histories compromises are accomplished with the aid of the hospital department which could not be made with the same celerity and economy in any other manner. By anyone taking time to investigate, it will be found that by the perfect training of both hospital corps and claim agent's corps, passenger wrecks are settled with greater celerity than can be done in any other way. Thirdly, by having a trained medical corps and a trained claim agent's corps, a complete history is supplied to the claim agent, and not infrequently the claim agent possesses this history months before settlement is effected, and by comparing reports made by the transportation department and the hospital department, it will be found that the reports from the hospital department give such a truthful history, taken immediately upon the inception of the injury, that it debars the possibility of the patient changing his statement and making a new case under the scheming advice of shysters and others. It comes very near being true that all injured men tell the truth to the doctor at the time of their injury. These reports being signed by the employes, it prevents the possibility of re-arranging their assertion by falsification. This complete surveillance enables the railway company to affect a compromise by the completeness of its knowledge. Upon a majority of roads having hospital departments, it will be found that in the settlement of personal injury cases, including employes, passengers and others, together with death losses, the liability of the company will rarely average more than $30 or $35 per capita. Not more than one employe in 200 sues, while with the passengers it averages one in 18½, and still with this low rate of settlement, with the assistance of various orders, to which he belongs, the employe is generally able to get his average daily rate of wage in the event of sickness and injury. Economically, then, the hospital department is of great value to a railway. We do not believe that any relief association can show as low rate of settlement in personal injury claims in all classes in any way approaching the rate accomplished by a claim department, assisted by a well organized hospital department.

Finally, we honestly believe that compromise and the claim agent will be the most concentrating factor in the settlement of personal injuries, as inflicted upon the railway, and we are morally convinced of this fact; that in the perfect union of claim department and hospital department, litigation will constantly lessen, and this will not only redound to the benefit of the injured person, but plainly to the benefit of all concerned. The general trend in the direction of compromise, particularly in serious cases (those which are of so-called railway spine), will in the future be more readily brought in the realm of compromise than that of litigation, for we are honestly of the opinion that the physician will find it in a positive line of his duty into whose hands the case first comes to study the subtlety of the problem with which they are called upon to deal, and that they will be as strenuous advocates of compromise as the claim agent himself. For even now the highly educated, prominent and efficient neurologists and surgeons of this country are honest advocates of compromise, knowing that prospective gain engenders diseased conditions and that a well-acted part in exaggeration of these injuries sometimes leaves them in a hopeless condition; hence, a true interpretation of their honest duty points to compromise and not to disease producing litigation.

THE MANAGEMENT OF RAILWAY INJURIES, WITH ILLUSTRATIVE CASES.*

By Dr. N. A. Drake, Kansas City, Mo.,
Surgeon C. R. I. & P. Ry. and C. M. & St. P. Ry.

After a successful operation has been done and the patient has rallied from the shock of the injury, operation and anæsthetic, it would seem to those not conversant with such formidable things that the worst was past. In many of the cases this is true, while in many other cases the fight has but just begun. Before the days of anæsthetics surgeons were of necessity much more rapid operators than now. I am certain that many patients lose

* Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May, 1896.

their lives now who would have lived under the old regime. Added to the shock of the injury we now have the shock of the anæsthetic, which is the greater in some cases; then, too, the disposition is not to hurry, hence the time of the operation is often unnecessarily extended. The nausea caused by the long continued anæsthetic becomes more profound, thus increasing the danger many times. I am decidedly in favor of rapid operating. We should have everything ready; know as nearly as possible what we expect to do; give as little anæsthetic as circumstances will allow; work as rapidly as we can and still not endanger the patient. By this course part of the dangers can at least be lessened.

In the following cases the treatment is simple and appliances few:

Case I: E. D., brakeman, 26 years old. On a dark, wet night, while making a coupling, his arm was caught between the bumpers, crushing it from the fingers nearly to the shoulder. In less than an hour after the accident it was dressed by a surgeon. Several hours after I was called, as the surgeon who dressed it could not be found. The arm was bandaged from the fingers to the shoulder with an external splint. The patient complained only of the tight bandage. On removing the dressing I found the arm covered with blisters, much of the skin coming off with it. It was swollen greatly and the arm looked like one gangrenous mass. I irritated the arm with water as hot as could be borne, then applied a bandage loosely, after which I immersed the hand, forearm and arm in hot water, using a tin trough made for that purpose. I directed the nurse to keep the arm in the water three-fourths of the time, if possible, and was gratified to note the relief the patient expressed after the first few hours of immersion. Hot water was added in the top of the trough while the cool water was drawn off through a faucet at the lowest point, without removing the arm.

As inflammation subsided I applied soothing liniments, rubbing and kneading for a half hour at a time, then bandaged the whole arm evenly and smoothly, as tightly as the patient could bear it. For the first few days the arm was kept immersed three-fourths of the time. I rapidly reduced his system with salines, following them with quinine, which interrupted the fever he had from the time I first saw him. On the eighth day I completed my diagnosis. The carpal bone of the middle finger was fractured and doubtless there was injury to other bones, but none broken. The cellular tissue, posteriorly—nearly to the shoulder—was full of extravasated blood. The skin from the whole arm came off. On January 1, after properly adjusting the fracture, I allowed him to go home. This case I think shows the efficacy of hot water in such injuries.

Case II: E. C. V., aged 35, engineer. While making up his train in the yard he jumped from the cab to couple on a car. In doing this his arm was caught in the coupling, tearing the sleeves of his clothing nearly off and splitting the skin and cellular tissue to the muscles, almost as clean as if cut with a knife, from the wrist to the elbow, nine inches. In the middle of the arm the skin and cellular tissue were completely severed. I could pass my hand through. Dirt, grease and iron dust were ground into the wound. There was but little hemorrhage, also but slight inflammation. I found it difficult to thoroughly clean it, the grease and dirt were so ground into the flesh. I irrigated with hot carbolized water, rubbed and scraped dirt out where I could reach it, then smoothed the skin and put it into place; sewed the cut up with catgut, dusted it with bismuth sub-iodide; then applied several layers of gauze, over this a thick covering of cotton, finishing with a smooth and evenly applied bandage. At the end of the first week, there being a rise in temperature, I removed the dressing. The inflammation was considerable. Apparently the skin and cellular tissue were united, but the edges of the skin, in places, were not, and looked unhealthy. It was very sore and he complained of a dull throbbing pain. I again irrigated with hot water and dressed as before. The next day the temperature was 100 degrees. I prescribed some calomel in broken doses during the day and in the evening a large dose of magnesium sulphate, followed with quinine. After this the temperature remained under 100 degrees. At the end of the second week all looked well except several points in the wound where the skin had not united; there was very little pus, however, and otherwise the arm was in good condition.

The separated skin and cellular skin had become adherent. I was very particular to dress it antiseptically in every way. A few of the points became unhealthy, but after touching them with a caustic several times they healed permanently.

This patient has every use of his arm; there are no adhesions anywhere. The long scar looks as though it had been made with a knife and was only skin deep.

Case III: J. B., aged 26, switchman. In trying to board a moving train in the yard he fell to the ground, striking the flexed knee on the movable end of the switch rail. His knee, as he struck, received the full force of his whole weight. The patella was split vertically, severing all tissue to the end of the femur and tibia. The cut was seven inches in length, laying the joint completely open when the knee was flexed. Believing a stiff knee at a slight angle superior to an artificial leg, and taking everything into consideration, it was determined to save the leg if possible. The wound was thoroughly irrigated with hot carbolized water, a drainage tube inserted, and the leg put up in plaster, with the knee at a slight angle. The leg was put in an easy position and everything done to make the patient comfortable. The temperature for the first week touched normal only twice—the mornings of the fourth and fifth days—the highest being 102 degrees. There was but little swelling and he made but little complaint. At the end of the third week he had several chills and the temperature stayed a few points on each side of 101 degrees. There was some discharge from the tube, and it being evident there was suppuration, the permanent dressing was removed. This was done the twenty-third day after injury. On the inner and lower aspect of the joint, near the end of the drainage tube, was a large abscess. I laid it open freely and there was at least a pint of pus discharged. The cavity was irrigated with a solution of per-oxide of hydrogen, 1 to 3, and I also flushed the entire wound with the same; dusted it with iodoform; packed it with iodoform gauze, wrapped the leg with absorbent cotton and over this applied a bandage from the toes to the hip. The leg was then laid over a double inclined plane, keeping it at the angle heretofore made. The splint was elevated about 45 degrees.

The next morning and for several mornings thereafter the temperature was normal, but very soon there was an evening rise. On the thirty-second day, the ninth morning after cast was removed, a hard chill supervened, followed by an evening temperature of 103 degrees. I removed the dressing and found three more abscesses, all above the knee. These were all laid open, irrigated as before, and packed after dusting with iodoform. The angle of the knee was maintained. The patient complained greatly of pain in the leg, so much so that we were obliged to give him morphine hypodermically.

The whole leg was swollen and the foot œdematous. After the second dressing at the end of the fourth week abscesses formed rapidly and we were obliged to dress the leg more often. All abscesses were opened and irrigated. We had kept his strength up by systematic feeding and he had been given tonics and digestives. As a result he had retained his appetite. On the sixth week he was attacked with diarrhea, nausea, profuse perspiration, in fact all the symptoms of iodoform poisoning. Iodoform was discontinued and sub-iodide bismuth substituted; also carbolized gauze for iodoform gauze. In a week's time the diarrhea was gone. About this time, fearing periostitis and necrosis, he was anæsthetized and the whole field of the disease thoroughly explored. The bone was not involved. All the abscesses were freely opened and irrigated. Anchylosis of the knee had already commenced. The morning temperature was about 100 degrees, the evening 102 degrees to 103 degrees. The patient had become greatly emaciated, yet his appetite was good. Apparently the seventh week was the crisis. The temperature had a downward tendency; abscesses were not as virulent and were less numerous; the inflammation gradually subsided and the mottled skin was clearing.

My attention was called to what might have been a bad bed sore, in the fifth or sixth week. It was in its favorite place, just over the sacrum, and the skin was broken in one place. I directed the nurse to bathe it thoroughly and then apply a large sheet of adhesive plaster, and from this time on there was no more trouble from it. It was necessary to dress the leg as often as every other day, when it was discharging so freely. This was very pain-

ful to him, but if neglected the temperature would shoot up a degree or two.

During convalescence we used a strong solution of carbolic acid instead of peroxide hydrogen, as it appeared to be more stimulating. The exhaustive night sweats were controlled with atropine and acid sulphuric. With two exceptions his appetite was always good. One has been mentioned, viz., when he was posioned by iodoform, the other, strange to say, was from accidental poisoning with atropine. A two-ounce solution of atropine for the eye was on the table in the medicine room, together with a solution of quinine and sulphuric acid, which latter he was taking, but by mistake he was given a teaspoonful of the former, which contained about one-half grain of atropine. He was delirious for a few days, but by the free use of morphia hypodermically came out all right.

He was given whisky as medicine when needed. Morphine was also prescribed when necessary, and, as is usual in such long, painful cases, the habit was formed and took considerable firmness to discontinue it when no longer necessary. There are no deformities in the leg except the stiff knee. The anchylosis is complete at a slight angle, so that in walking he does not have to swing the foot out to step forward. When he is walking from you the lameness will not be noticed.

There are many lessons taught in this case.

The first abscess was at the end of the tube; there was no rise in temperature to amount to much until pus formed. Had we amputated, as advised time and again, even before and after the formation of pus, he would have recovered without suppuration, getting well in three or four weeks without a leg and suffering very little comparatively; instead getting well with a leg and a stiff knee, in fifteen or sixteen weeks, with a great deal of suffering. Now he is able to do nearly the same kind of work he did before the injury. Had I amputated and he had recovered he could not have done his work with an artificial leg as easily as he now does with his own leg with the stiff knee.

Had I consulted my feelings—I won't say interest—I would probably have amputated. I must confess that I am human; so when one of these cases falls to my lot, where I can see several weeks of hard, aggravating work, I often ask myself: "Why not take the shortest road and amputate?" Up to date I have never given way.

Case IV: W. R. C., aged 45; freight conductor. In doing the switching at a way station the caboose was struck by a wild car running at a high rate of speed, knocking it from the track, catching the conductor between its rear platform and the platform of the station. His right femur was fractured through the neck, and there was an impacted fracture just below the trochanter. The left femur was fractured just above the knee very obliquely. Three ribs were broken on the right side. There were several scalp wounds and the right hand was badly lacerated. Both ankles were sprained, the right the worst. There were many other contusions and sore places that were trifling compared with what is described.

This accident occurred in midwinter, 250 miles from home. By his own request he was brought home. After a little delay the fracture bed of the railway company was obtained and in a very short time the fractures were adjusted and he was lying with several pounds pulling each foot, the foot of the bed elevated six inches, the body being the counter extending force.

He was accompanied home by Dr. Billingsly, the company surgeon at Belleville, Kan., who aided me in putting him together. That night he had a hard chill and I found him the next morning with temperature of 101 degrees. I called in Dr. Thompson, who lived a few doors away, and requested him to look after his lungs. The second morning the temperature was 102 degrees plus, and he was expectorating blood quite freely. However, only one lung, the right, was involved. From this he recovered quite rapidly, everything considered. I endeavored to use as little retaining apparatus as possible to keep the legs in place. On either side of them I placed long, slim sandbags, and as the muscles relaxed I lightened the weights, endeavoring to keep the balance as near as possible. The cough irritated and caused a great amount of pain in the region of the broken ribs, but with careful bandaging the ribs were held in place and the muscles of respiration paralyzed. Mr. C. is of a nervous temperament, and as the pneumonia dis-

appeared his wants and suggestions were very numerous. I had let up on the weights during the pneumonia, till the left, the oblique fracture, had slipped. It had eight pounds then but it required twelve to hold it. Eight held the right.

Toward the last of the third week, as he was convalescing from the pneumonia, his extremities became quite œdematous and there was quite an amount of albumen in his urine. Under a course of salines healthy conditions were soon established. The dressings of the legs had become somewhat deranged, making it necessary to renew them. In doing this we used all caution possible and took advantage of the circumstance to stimulate circulation by massage; then carefully and evenly bandaged the foot and ankle before applying the adhesive plaster for extension. At this time also that old curse of such cases, the bed sore, began to show up. With stimulating lotions for a few days, followed by a large square of adhesive plaster, it was entirely interrupted. He was also given a course of iron and digitalis, with a good, generous diet, It was very difficult to keep him still. He would get the bandages loosened in spite of me, and but for the well arranged fracture bed I do not know how I should have come out.

The eighth week I ventured to move the joints passively when I was re-dressing. The right knee was very stiff; the left one I dared hardly stir, the fracture being so near the joint. Apparently union was advancing in all the fractures. It was more noticeable at the trochanters. The provisional callus was easily felt. I had let up on the weights, the right six pounds, the left eight. I was greatly troubled with the œdema. In spite of heart tonics and saline diuretics the urine carried albumen more or less. Finally I bandaged each leg from the toes to the body and let the foot of bed down two inches, and used massage vigorously whenever the dressing was removed, as well as putting the joints through their normal motions. This carries us to the twelfth week.

Buck's method of treating fractures cannot be too highly commended. The principle of making the body the counter extending force, thus doing away with the old perineal band, was a great relief, for it was almost impossible to prevent perineal abscesses.

The sandbags for side supports were another great improvement over the long Desault splint, saying nothing about the comfort to the patient. We learned long ago by actual experience that the simpler an apparatus was and fill all the indications, the better it was. With a good fracture bed and Buck's position, a patient has more liberty without disturbing the dressings than any other I know of.

The twelfth week I let the bed down and removed all dressings. There was bony union in all the fractures. The callus at the impacted fracture was the largest. The joints were all quite stiff. The right knee I could bend but a few degrees without causing great pain; the left, to nearly a right angle. In the right femur—the neck—I was never sure whether the fracture was in or outside the capsular ligament. From all appearances there was bony union, hence this leads me to infer that it was outside. The provisional callus at the trochanters was very large. The oblique fracture of the left slipped a little in spite of me and bowed out somewhat. The ankles were quite stiff. I sat him up with his feet in a vessel of hot brine and with a large, soft sponge gave his legs a good rubbing, following with a thorough kneading, then re-applying the straps for extension, bandaged as before, putting on extension every night for several days. Every morning he was let down and every joint put through its normal motion as far as possible. All joints yielded readily except the right knee. The œdema disappeared slowly. I molded a felt splint to the left leg and on the fifteenth week discontinued extension. He could sit up an hour at a time without much distress and began to put some weight on his feet, but it was slow work for him. The sixteenth week the fracture bed was deserted. The right knee was gotten to a right angle; œdema was also going, but we were obliged to continue the bandages. With care he could bear some weight on his feet. By the last of July he was going all around on his crutches. Everything was going our way except the right knee that stuck at right angles. He would not consent to forcible measures.

The first of August he was going down from the elevated depot to Union avenue, when he stumbled and went down promiscuously. He was gathered up and sent home, where I met

him. The old impacted fracture was now complete and as near a transverse one as I ever saw. Outside of bruises this was the only injury. Fearing non-union I put the fracture up in plaster. We hung him up on a tripod, commenced the plaster just above the knee, carrying it up the thigh to the body, then in spica style around the body, leaving the left leg free. After a week's time I instructed him to get on his crutches, hoping thus to create local inflammation enough to cause union. In two months' time he was going almost everywhere again. I cut the cast off during the twelfth week and happily found good union with a still larger callus. The right knee stayed at right angles until he fell down again, about a year after he was first injured. He was sure he had broken it over again, but when he found he could completely bend his knee, he knew what he had done. Two years after the injury he was walking with a cane with hardly a limp.

Whenever it is possible I attend my own cases till discharged. I attend to every minutiæ and visit them as often as necessary. The difference in bills it is hard to make the non-professional understand. If an amputation is done and everything goes as it should, the patient is out on crutches in three weeks or so, and the bill of two or three hundred dollars is thought to be all right; but the patient with a crushed leg which the surgeon has saved by months of hard labor and ingenuity, and which is far superior to any artificial one, protests the bill for several hundred dollars. It makes one feel as though he had not done much of a good thing after all.

In Case I observe that continual immersion in hot water resolved the inflammation. I say continual. I get the patient in an easy posture and keep the limb completely immersed in water as hot as the patient can stand, for hours at a time.

Case II was rather unique. Over one-half of the forearm was completely skinned.

In Case III the knee-cap was severed quite smoothly a little outside the center. The periosteum of both tibia and femur was cut through. When the knee was sharply flexed the ends of both tibia and femur were completely outside the wound.

I am firmly impressed that had I omitted the drainage tube primary union would have taken place and saved the patient long, long weeks of suffering, and me weeks of hard work and worry. But when I see him now walking with hardly a limp, and doing all the work he did before the injury, I certainly have no regrets.

Case IV shows nature's great reserve in reparative work, particularly in the fracture through the trochanters, where there already existed a large provisional callus, there was, for all this, a good union. Nature, after all, with a little help, is a great surgeon.

I have always maintained that it is the surgeon's duty to attend to the after treatment of his cases personally. I have almost always done so and my results are good—pardon the egotism. I am not afraid to compare results with anyone. In my opinion these good results are greatly due to the personal attention I give my patients in the after treatment.

1001 Harrison street.

HOW THE RAILWAY SURGEON SHOULD AID THE FAMILY PHYSICIAN.

By Evan O'Neil Kane, M. D., Kane, Pa.

The railway surgeon should not merely be prepared to render his services as a company surgeon to the railway that employs him, but he should realize the necessity for being always ready to aid his less surgically inclined medical brethren. There is plenty of surgical work of every description to occupy him if he chooses to show the profession in his vicinity his willingness and ability to help. Yet there are comparatively few local railway surgeons who recognize the duty they owe to the rest of the profession in this respect. It is to be regretted that so few skilful operators reside outside of the large cities. Also that those who do are encumbered with a busy general practice. This renders it impossible for them to attend promptly the summons of physicians in their locality. Consequently in many an emergency the patient dies for want of the proper operative treatment, or becomes a chronic invalid, or is crippled.

In reply to the demand for better and more easily procured surgical aid, the answer made is that all patients requiring such treatment should at once be dispatched to a hospital; that

it is useless to operate upon them at their homes and that chances of recovery are always so much better in a hospital than in private practice, that no other method should ever be pursued. This is obviously absurd. Such a course may be well enough for the poor and ignorant, perhaps, or for the homeless and helpless pauper. But who that has a home of his own, a loving family and devoted friends, is willing to break all ties and be transported to some distant institution, far from all he holds most dear. Especially is this true if he contemplates, as who does not, the possibility of his not surviving the operation.

The city and hospital surgeons, too, do not seem to consider the position held by the family physician in such a case. They entirely ignore the part played by him in conducting his patient's case to a favorable termination, counting for nothing his intimate knowledge of the sufferer's indiosyncrasies and family history. Last, but by no means least, they forget to view the family physician's position from a pecuniary standpoint. No one cares to lose sight of a lucrative patient and have fees which really belong at home paid to some specialist in a distant city. And too often the patient, if he returns, comes back prepared to sneer at his old medical adviser, believing that he knows nothing, and determined that henceforth neither he nor his family will allow their cases to be "botched" at home, but will in the future "doctor in the city." The family physician, too, no matter how much time and anxiety he may have expended prior to the departure of his patient to the hospital, must expect the payment of his fees for such services to be postponed indefinitely, that the bill for hospital care and the surgeon's services may be paid promptly.

It is to be hoped that the need for good surgeons who are ready and willing to come promptly when called by their medical brethren will ere long be sufficiently appreciated by our railway surgeons to make them desirious to fill this want. Many of our local railway surgeons are as capable and as intrepid as is any one of our city specialists of hospital fame, and were they willing to give special attention to operating for their medical brethren promptly and for reasonable fees they not only would confer upon them a great benefit, but would soon find themselves amply repaid for the trouble and the little additional outlay in instruments and surgical outfit. The fact of their having free transportation, too, upon the roads with which they are connected would not only enable them to operate with less expense to the patient, but also should the family physician request it, make the first dressing and explain thoroughly to him the future conduct of the case, with only an expenditure of time.

Their training and experience with serious emergency work fits them peculiarly for this very sort of operative surgery. For not a few of them have more than once been obliged to put their courage and ingenuity to the highest test. With them it is not an infrequent occurrence to have to fill at one time the position of surgeon, assistant and nurse, yea, even chloroformist, spiritual adviser and police as well. And yet despite every adverse circumstance and surrounding, their skill and ability is proved by the success that crowns their efforts. With such a training and so varied a surgical experience as is thus obtained by the country or railway surgeon it is strange his services are not more highly appreciated.

With a portable operating table, such as that of Dr. Buchanan, an emergency operating case like that of Dr. Bevan, and with plenty of sterilized normal salt solution and a well-lighted and tolerably clean room in which to operate, there is no reason why the average railway surgeon should not obtain as brilliant results as the better equipped hospital surgeon.

My position in connection with hospital work for many years forbids my depreciating the superior value of hospital care for injured and operated cases, yet I cannot deny in justice to the general practitioner, that many a life is jeopardized and the chances of recovery lessened by the fatigue, fear and anxiety incident upon removal from home, friends and family physician to the hospital. I see, also, no reason why, all things else being equal, provided a good nurse is obtained, a case cannot be as well cared for subsequently at home as in a hospital and certainly both patient and family will be far happier and the family physician better paid.

Dr. O. A. Hopkins of Lynchburg, O., has been appointed assistant chief surgeon of the Pittsburg & Western Railway, with headquarters at Pittsburg, the appointment to take effect November 20.

THE FUTURE OF RAILWAY SURGERY.*

By Clark Bell, Esq., of New York, President Medico-Legal Congress of New York.

Whatever may be said or thought of the claim that medicine was not an exact science, by its enemies, its devotees or its friends, no one can, in the light of the wonderful progress made in modern surgery in the single generation since the American civil war, deny or question even the scientific precision now attained by its great leaders and exponents in the practice of surgery.

The steps by which the science of surgery has advanced in our day and generation have been as grand and stately as they have been effective, and as valuable to mankind as they have been wonderful, yes, almost marvelous in results.

In 1861 a gunshot wound of the abdomen was regarded as almost necessarily fatal. To-day as illumined and illustrated by Surgeon J. N. Hall and other masters of this branch of surgery, and explanation for the reasons of his failure would be rightfully and lawfully demanded of the surgeon who lost such a case.

In my boyhood the ablest and most successful surgeon in Western New York, where I then resided, told me that in abdominal surgery, especially in woman, he frankly stated to his patients before operation that the risk of life or death was almost even in cases of ovariotomy.

See that great army of suffering women of the past, who, with a courage higher than that of the soldier who faces death in battle, because without its stimulating excitement, have faced and met death under the knife of the surgeon, due to the ignorance of what is now universally known in the practice of that art.

We lament the ignorance and superstition which swelled the vast army beyond the Styx; of widows burned on the funeral pyres of their dead husbands; but is that concourse, vast as it may seem, greater than the mothers and daughters of our forefathers, who thus perished for the want of that light in surgery whose rays are to-day as effulgent as the sun?

I remember Sir Lawson Tait announcing in the British Medical Journal, not a great many years ago, that brilliant record of six hundred cases of abdominal surgery in women without the loss of a single life, and to-day the properly equipped and skilful surgeon who lost such a case by his own fault could be made to respond in damages if sued for malpractice, as all now agree he should be made responsible.

Electricity has thrown upon surgery a brilliant, a marvelous, a penetrating and a wonderful light, of incomparable value and incalculable worth. With its magic lantern it has revealed much of the human body to the eye of the surgeon hitherto veiled, dark and inaccessible, while the new Roentgen ray, or its recently discovered properties, opens the outer door of a vestibule to a yet unexplored gallery of human knowledge in surgical science, as amazing in its results, even thus far reached, as it is counter to the hitherto accepted views of man. We are facing some marvelously strange facts just now in physics, when we find a light that passes through solids and metals at will, but which with great difficulty penetrates glass, through which the light of the sun passes readily, and we are considering whether we shall recast our definitions of the word "opaque" as applied to matter, and are searching for that unknown, mysterious, yet silent force, that, stronger than gravity, and overpowering, yet in spite of it makes the shoot of grain grow and stand erect, and advance upward like the tree, which under the nurturing hand of nature produces, when undisturbed by extraneous influences, some of the most beautiful and graceful objects in the created universe.

All the sciences act as handmaidens to surgery and pour into her lap the wealth of their discoveries.

Chemistry, which stands as a base and corner-stone for the whole structure of the physical sciences, the prolific mother of the wealth of the whole world, stands to surgery not unlike the angel who rolled away the stone from the sepulcher two thousand years ago, opening the door through which the light comes forth to glorify, illumine, and by which we see that before hidden and unknown.

It is doubtful if there is anything that re-

*Read by title at the Ninth Annual Meeting of the National Association of Railway Surgeons at St. Louis, Mo., May, 1896.

ally exists which can properly be called new. Whatever is, always was, and must be old, and from the beginning.

Chemistry knows all. To her nothing is new. She simply now and then withdraws the veil which obscures the imperfect human vision, and reveals to her favorites, little by little, that which she may have before blazoned at noonday, in the pre-historic times, to her favored priests, who then kept alive the sacred fires upon the altars within her temples.

She has her favorites, and she lifts a corner of the curtain to such superb students as Edison, Tesla and Roentgen, from which come glances and flashes of a light incomparable and brighter than the noonday sun, to teach us how limited is the sum of present knowledge of the great truths of nature, and how little the wisest man does really know of what may be some day attainable and general human knowledge.

Truths are truths, entirely independent of human appreciation or perception, and the limitations of human knowledge do not offset, change or even modify them.

The knowledge of a few of the mysteries of electricity furnished to mankind by the wizard Edison were truths before, and would have been truths had Edison died in his boyhood; and the quality of the cathode ray was neither changed nor modified by the genius of Roentgen in his recent discovery.

The microscope, the spectroscope, the marvels of photography; the ripe labors of the bacteriologist; the whole field of advance in antiseptic surgery; the wonderful inventive genius of man in the construction and adaptation of instruments and appliances for surgical work; electricity as a force in the delicate mechanics of surgery, and notably of the saw, with its almost incredible velocity, so admirable in delicate operations upon bone and cartilage, and of producing at will, and in exact locations, intense heat, not to enumerate many aids now at the ready surgeon's hands, place the surgeon of to-day on an immeasurable height above even the surgeon of 1861.

The railway surgeon then enters a field quite new in the domain of surgery in the past, but he is armed cap a pie and he has a great future.

The first railway was built after the close of the first quarter of our century. It was a slow growth at first, but has become now, upon the American continent especially, the foremost factor in development and in the advancing march of civilization.

In surgery it has a field wholly its own. It represents and protects an enormous class, whom it treats in cases of accident, and whom it has to regard as well in preventing against accident, and in avoiding so far as possible by precautionary measures:

1. The employes of the railways.
2. The great public who travel upon them.

The mission of railway surgery in the immediate future should be:

1. To arrive at the highest stage of excellence in ability to treat the injured.
2. To establish the hospital as a fixed system in railway service, the better to execute the first great duty, and to give to the most exposed class, the employe, the very highest and best surgical service combined with the greatest economy to both railway and sufferer, be he employe or passenger.
3. Prevention of injury upon railways so far as possible.
4. Improved sanitary measures in the interest of the general public in the transportation of passengers to prevent infection or the spread of contagious diseases.

Suture in Veins and Arteries.

Dr. Sabanyeff of Odessa reports two cases of this kind. In the first the suture was applied to the femoral vein wounded during incision of the inguinal glands; in the second to the femoral artery. In the latter case the patient died from the original disease, and Dr. Padalka found by microscopical examination that the healing of the wounded artery took place from without inward. Dr. Heidenhans (Centralblatt für Chirurgie) cites two previously recorded cases, one involving the common femoral and the other the common iliac. He reports an instance in his own experience, in which in removing cancerous glands from the armpit an incision was made in the main artery. The bleeding was arrested by digital compression and the edges of the arterial wound were brought together by a continuous suture of catgut. Bleeding was thus completely arrested. The lumen of the vessel was not apparently diminished. The sutures held in spite of strong arterial pulsation. The patient made a good recovery. The axillary artery could be felt pulsating along the whole extent of the armpit.—Medical Record.

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HANDS AND FEET.

The extremity terminals of our body are of special interest to the railway surgeon, first because they are the parts with which he has most frequently to deal; secondly, the injuries thereto are usually of the contused and lacerated variety; thirdly, the wounds are always primarily infected, and lastly, there is practically always a monetary element connected with the case and consequently with its result. While these points are in no sense new, we desire to call attention to the increasing conservatism which our present methods and means of treatment of wounds unquestionably justifies.

At a recent surgical convention the subject of hand injuries were generally discussed, and some of the results reported were quite remarkable. Conservatism was the unanimous verdict. There can be no doubt but that the very free blood supply of the hand, like that of the face, better fortifies these tissues against the invasion of pathogenic micro-organisms than other parts of the body. And it is also unfortunately a fact that in no part of the body are the effects of suppuration more disastrous than in the hands. While we are favored, then, by nature as to the probability of sepsis, our patients are especially endangered by the character of their occupation and by our failure to secure asepsis. As to our duty to the unfortunate whose future is to a certain extent in our care, there would seem to be no doubt, regardless of the pecuniary considerations of the case. It resolves itself into the simple question of right and wrong. It is right to preserve, and wrong to destroy, that which can be saved, and if there is any question as to the viability of the tissues of these parts, the cause of humanity demands that the injured party be given the benefit of that doubt. This general proposition should be qualified by a certain element of expediency, and that is providing the parts can be rendered useful. A stiff finger or one devoid of its flexor tendons is a menace to both the hand and life of the average railway employe, and therefore it is as positively wrong to save a useless finger as it is to unnecessarily sacrifice parts of a doubtful one. The determining element of the viability of an injured tissue is the circulation, and while nature is the great restorer, uncleanliness is its greatest antagonist. The teachings of the day are cleanliness at the cost of any amount of time and regardless of the discomfort to the patient. With absolute cleanliness secured at the first dressing practically all of the danger disappears. In parts so readily accessible as the hands and feet, thorough cleansing and absolute disinfection would seem to be easily obtainable, and yet we are reluctantly convinced that the large majority of wounds of these members are allowed to suppurate even in these, the closing days of the nineteenth century. Our books and journals are full of new powders and solutions for the easy securance of asepsis, but the circumstances under which nine-tenths, if not more, of the injuries are treated, render short routes impracticable. It matters not whether we use chemical antiseptics or not, as long as we secure asepsis, but usually some potent germicide, in addition to mechanical measures, will make our disinfection more certain. By maintaining asepsis there is absolutely no danger in attempts at conservatism, even with necrosis of large areas of tissues.

In railway employes the question of

usefulness of the parts should invariable be given precedence, whereas in those whose occupations do not entail any danger the cosmetic effect should very properly be given full consideration and under some circumstances even to the extent of saving useless members.

The Northern Pacific Hospital at Missoula.

The last issue of the Railway Age says:

The Railway Age is a thorough believer in the advantages of a properly organized surgical service on a railroad, in the hospital system and in beneficial and relief associations. If the three can be combined in one organization so that the employes who are members of the relief or beneficial association have some voice and ownership in the management of the hospitals, so much the better. Most of the larger companies of the west know by experience the advantages of having their own hospitals, for it is an advantage to the company as well as a blessing to the men. On eastern roads which, for the most part, run through well populated districts where adequate hospital facilities are always at hand in the frequent towns along the lines, the need of special hospitals for the employes of the companies is less apparent, but in the east also the railway hospital is gaining ground, and it is unlikely that in the near future any railway of any considerable size will be without its own hospital and its own corps of surgeons, under the direction of a chief surgeon, who should be as much an officer of the company as the general superintendent or the chief engineer. The work which has been done and is being done by the National Association of Railway Surgeons has gone a long way to impress on railway men in general the importance of this branch of railway management, just as it has impressed on the medical profession the right of "railway surgery" to be regarded as a distinct department of surgical science.

THE NORTHERN PACIFIC HOSPITAL AT MISSOULA, MONT.

One of the prosperous and well regulated beneficial associations of the country is that of the Northern Pacific, the chief hospital being located at Missoula, Mont., under charge of Dr. J. J. Buckley. We give an illustration of the hospital building herewith. In a letter to the editors of The Railway Age, written at the end of September, Dr. Buckley said: "I only regret that I cannot show you the beautiful grounds filled with flowers and surrounded by fine trees."

Notes of Societies.

The Western Surgical and Gynecological Association.

The fifth annual meeting of the Western Surgical and Gynecological Association will be held at Topeka, Kan., Monday and Tuesday, December 28 and 29, 1896. The secretary, Dr. H. E. Pearce, desires us to extend to all regular physicians and surgeons a cordial invitation to be present and take a part in the proceedings.

Topeka is a delightful city, noted for its hospitality, and the local profession have arranged for the entertainment of all who will come. A strong programme is assured. Opening session at 1 p. m., December 28.

American Association of Obstetricians and Gynecologists.

The American Association of Obstetricians and Gynecologists, at its ninth annual meeting, held at Richmond, Va., elected the following named officers for the ensuing year, namely: President, James F. W. Ross, M. D., Toronto; vice-presidents, George Ben Johnston, M. D., Richmond, and John C. Sexton, M. D., Rushville, Ind.; secretary, William Warren Potter, M. D., Buffalo; treasurer, Xavier O. Werder, M. D., Pittsburg. Executive council: Charles A. L. Reed, M. D., Cincinnati; Lewis S. McMurtry, M. D., Louisville; A. Vander Veer, M. D., Albany; J. Henry Carstens, M. D., Detroit; and William E. B. Davis, M. D., Birmingham.

The next annual meeting was appointed to be held at the Cataract House, Niagara Falls, N. Y., Tuesday, Wednesday, Thursday and Friday, August 17, 18, 19 and 20, 1897.

Meeting of Wabash Surgeons.

The annual meeting of the Wabash Railway Surgeons' Association was held at St. Louis, Mo., November 5, and many prominent physicians from six states, who are connected with the Wabash road in a professional capacity, attended.

President E. R. Lewis of Kansas City presided at the sessions. In the afternoon General Manager Ramsey was present and made a brief congratulatory speech.

The following scientific programme was carried out:

"Traumatic Abscess of the Brain, with Report of Four Cases," by Dr. W. A. McCandless, St. Louis, Mo.

"Dislocation of Cervical Vertebra—Report of a Case," by Dr. O. P. McDonald, Keokuk, Iowa.

"Therapeutic Value of Venesection in Disease and Injury," by Dr. J. W. Young, Bloomfield, Iowa.

"Fractures of the Patella," by J. W. Jennings, Millersburg, Ind.

A Paper—title not given, by Dr. W. H. Myers, Fort Wayne, Ind.

"Suppuration," by Dr. W. S. Powell, Defiance, Ohio.

"The Value of Drainage and Irrigation in Septic Inflammation, with Report of Cases," by Dr. T. B. Campbell, West Lebanon, Ind.

"Diagnosis and Treatment of Gunshot Injuries of the Abdomen," by Dr. T. F. Martin, Brunswick, Mo.

"Operation for Empyema," by Dr. Joseph Pogue, Edwardsville, Ill.

"One Hundred and Eighty-Four Operations for Radical Cure of Hernia," by Dr. E. W. Andrews, Chicago, Ill.

"A Plea for Incineration of the Dead," by Dr. B. Lincoln, Missouri City, Mo.

"Treatment of Inoperable Malignant Disease by Hypodermic Injection of Erysipelas and Prodigiosess Toxines—Peritonitis," by Dr. J. A. Weitz, Montpelier, Ohio.

"Abscess of the Liver After Appendicitis," by Dr. H. C. Howard, Champaign, Ill.

Papers promised but titles not sent to the secretary, by Dr. R. Gillaspy, La Plata, Mo.

Volunteer papers and report of cases, by Dr. W. R. Schussler, Orland, Ill.

Prophets Not Without Honor.

The Medical Record reminds us that when the Crown Prince Frederick of Germany was suffering from carcinoma of the larynx, he sent to England for a laryngologist; that when the Czar of Russia was ill he had his own physician, but sent to Berlin for a consultant, and says that now Queen Victoria is suffering from failing vision and has sent to Germany for an oculist, Doctor Pagenstecher of Wiesbaden, to examine her eyes. It is said, in explanation, that there is a pamphlet in circulation in which many of the leading oculists in England are spoken of in disparaging terms, and it is intimated that the Queen is influenced by that to send abroad for advice.

Carrier Pigeons in Medical Practice.

A doctor in the highlands of Scotland, whose patients are scattered over a wide district, takes carrier pigeons with him on his rounds and sends his prescriptions by them to the apothecary. He leaves pigeons, too, with distant families, to be let loose when his services are needed.—Chicago Medical Recorder.

Notes, News and Personals.

It is with sincere regret that we chronicle the death of our distinguished fellow and ex-president, Dr. James Bissett Murdock of Pittsburg, Pa. He died at his home October 29. He was born in Glasgow, Scotland, October 16, 1830, and was therefore 66 years of age. He graduated from the New York College of Physicians and Surgeons in 1854 and was an interne in Bellevue Hospital. From 1855 to 1872 he practiced at Elmira, N. Y., the home of his father, the Rev. David Murdock, D. D., but since that time has lived and worked in Pittsburg. He was a member of the Oswego County Medical Society and was its president in 1865; of the New York State Medical Society; of the Allegheny County Medical Society; of the Pittsburg Academy of Medicine and School of Anatomy, of which he was president in 1877; of the Pennsylvania State Medical Society, of which he was president in 1888, and of the American Medical Association. He was president of the National Association of Railway Surgeons in 1889. During the War of the Rebellion he was brigade surgeon-in-chief in the Twenty-fourth New York Volunteers. He was a member of the Grand Army, of the Loyal Legion, a trustee of the Pennsylvania College for Women, and late Dean of the Western Pennsylvania Medical College. He was a frequent contributor to medical literature and wrote well and wisely. We hope to publish a fitting obituary later.

The Wabash Railway Company has just completed a new hospital at Peru, Ind., of which it is very proud. It is of brick in the form of an octagon with wings, covering an area of 198x123 feet. It is two stories in height with an observatory and tower. The hospital will accommodate 100 patients, and aside from the usual hospital appointments is provided with reading rooms and reception rooms for the use of the patients and their friends.

Commendable Testimony in a Malpractice Trial.

The Wiener Klinische Rundschau for August 16 summarizes an account of a malpractice case from a journal that it calls "N. Fr. Pr.," which may or may not mean Neue Freie Presse. It appears that the physician against whom the action was brought had been called to attend a woman in childbirth, and had undertaken some operation which he considered necessary, but had found himself obliged to leave it unfinished and send the patient into a hospital. There an operation was performed and the woman died on the following day. At the post-mortem examination a laceration of the internal organs was found, also a foul canal, and it was concluded that the injuries had been inflicted with the forceps. In the complaint the physician was charged with having displayed lack of skill in the operation.

Two expressions of opinion, says the account, were of noteworthy weight in the case. On the strength of Professor von Hofmann's necropsy, the judge held it to have been shown that the woman's injuries must have been inflicted before she entered the hospital, and that the physician's operative procedure was not in accordance with the rules of the obstetric art. Professor Schauta gave expert testimony as follows: "The first question is that of whether the operation was indicated, and to that I must answer yes. In this case I should have done the same thing myself; it accords perfectly with the rules of obstetrics. This I must maintain here in direct opposition to Professor von Hofmann's opinion. The woman's physician, to be sure, inflicted the injury with his instrument. But now comes the question, Is that pardonable or not? As to that, I must say that apparently the instrument deviated from its position in consequence of some slight movement on the part of the patient. The circumstances of private practice in such a case are peculiarly embarrassing. In hospital practice we anæsthetize the patient and she lies perfectly still. In this instance, however, there was no assistance but that of the midwife. I may remark that all of us, from the first to the least, are often so situated as to have to say with regard to mishaps: Something has happened that might have been avoided. There are disastrous occurrences that are due to the extraordinary difficulties of obstetrics. The present case was one of misadventure, and surely it is not to be attributed to the physician's negligence or ignorance."

The Rundschau commends Prof. Schauta's testimony from every point of view, and so do we.—N. Y. Medical Journal.

Strangulation of the Penis by an Iron Screw-nut.

Weinlechner (Wien. klin. Wochenschr., No. 24, 1896) reported to the Vienna Medical Society the case of a boy of 14, who, having passed his penis through the lumen of a screw-nut two days before admission, had been unable to withdraw it. The peripheral portion was much swollen, and the foreskin very œdematous, but micturition was not arrested. The hexagonal nut was 3.2 cm. in diameter by 2.3 in thickness, the lumen was nearly 2 cm. across. His father had tried to remove it with a file.

Four greased strips of linen were passed through the nut on four sides of the hexagon, and by traction on these while the central end of the organ was kept steady the nut was drawn off. The excoriation and swelling soon disappeared.

Extracts and Abstracts.

Epithelial Sowing; A New Method of Skin-grafting.

F. von Mangoldt (of Dresden) has conceived a method of skin-grafting, to which he has given the name of "epithelial sowing," which, for ease of execution and certain other advantages, merits careful consideration.

The epithelial elements are obtained by simply scraping a healthy cutaneous surface.

For this purpose he prefers the external or internal surface of the arm. The chosen spot is carefully shaved and disinfected and then, with a sharp sterilized razor, held perpendicularly to the skin, the epidermis is scraped away until the papillary layer is reached. In this way a magma is obtained, composed of epithelial cells and extravasated blood, which is spread upon the surface to be treated and thoroughly pressed in with a spatula. This sowing is very simple in case of a fresh wound, provided that the blood has ceased oozing; but in case of an old or infected wound it is necessary to remove the granulations and thoroughly disinfect it.

In order to make sure that the epithelial elements adhere closely to the wound, it is advised to scarify it with a small and very sharp bistoury before spreading the scrapings upon it. The spot from which the epithelial has been borrowed is dusted with dermatol, covered with sterilized gauze and bandaged.

The grafted area is covered with strips of protective, over which an aseptic dressing is placed. The region from which the epidermis has been removed resumes its normal appearance in a few days.

The transplanted area, during the days immediately following the operation, looks as if covered with a pseudo-membrane; it loses its primitive brick-red color and becomes yellowish gray, a change due to the coagulation of the fibrin. At the fifth to seventh day the fibrin begins to disappear and the color changes to bluish rose, the first sign of the proliferation of the epidermic elements. Toward the middle or the end of the third week the surface is completely covered with epithelium.

After the fifth day the dressing is changed every two days, and the wound is gently irrigated with a sterile warm, normal salt-solution. After the tenth day boric acid is dusted on. The new epithelial layer is at first thin and glossy, later it thickens and begins to desquamate. This desquamation, probably due to the absence of the glands normally present in the skin, should be combated with ointments of fat or oil.

Not the least of the advantages of this method is the fact that no pockets of necrotic tissue are closed in by the new skin, as sometimes happens in grafting by the Thiersch method.—Le Semaine Medical.

Nerve Suture and Regeneration.

At a recent meeting of the College of Physicians of Philadelphia, Dr. Thomas S. K. Morton presented a man, aged 34 years, who was admitted to the Pennsylvania Hospital, August 10, 1895. His left arm had been caught between a revolving wheel and its belt. An extensive crush and laceration had resulted. There was a wound of the inner aspect of the arm running from elbow to just below the axilla. The biceps was almost cut through, so also the triceps and brachialis anticus. The brachial artery was torn, the ulnar nerve cut across, and about two and a half inches of the median nerve stretched tightly across the wound free of all support save its sheath. A large chip of bone was bitten out of the inner aspect of the humerus. The main wound connected with a smaller one on the outer side of the arm. There were also several smaller wounds about the larger ones, and the whole extremity from axilla to nearly the wrist was much contused and "brush-burned." The arm below the wounds was perfectly cold and white and possessed no sensation except of the feeblest character in the median distribution. There was no radial or ulnar pulse.

Amputation was advised, but peremptorily rejected by the man and his relatives. Therefore, under ether, the wound was cleansed of considerable machine-oil and other foreign bodies; ends of frayed muscles and skin dissected away; the upper and lower ends of the brachial artery sought for and ligated; the torn muscles partially approximated by catgut sutures; the ulnar nerve carefully sutured with the same material; the whole cavity sponged out with 1:2,000 bichloride solution and then gently stuffed with iodoform gauze. No attempt was made to suture the cutaneous wounds. The arm was then done up in a copious gauze dressing wrung out of hot sublimate solution and placed under irrigation of the same in a position of slight flexion at the patient's side, while cotton batting and hot-water bags were kept constantly applied to the forearm and hand.

On August 12 the forearm had warmed up, and on the day following irrigation was suspended. On the 19th a feeble radial pulse could be distinguished and sensation in the ulnar distribution was fair. Wound had begun to rapidly fill with granulations. The exposed sheath of the median nerve had become covered with a mass of red granulations starting from its emergence from the tissues above and below the exposed portions. These increased

in bulk to half an inch in diameter and ultimately blended with those arising from the deeper portions to the height of the nerve bridge across the chasm of the wound.

Improvement continued uninterruptedly, and toward the end of September the wound finally closed. The cicatrix, while very large, does not at the present time interfere with free flexion and extension of the arm, although at one point attached to bone. The biceps and triceps are fairly strong and increasing in power. Sensation in the median distribution is perfect, and in the ulnar almost so and still improving.—Annals of surgery.

Old Dislocation, With Fracture of the Neck of the Humerus.

At a recent meeting of the New York Surgical Society, Dr. B. Farquhar Curtis presented a boy, fourteen years of age, on whom he had operated four weeks after an injury resulting in dislocation of the shoulder with fracture of the neck of the humerus. The injury had taken place in November, but its severity was not understood, and until he saw the patient the treatment had consisted simply in putting the arm in a sling. Dr. Curtis found the head of the humerus dislocated below the coracoid process, and the surgical neck fractured. The arm was almost painless, but there was great limitation of motion. The elbow could not be raised from the side at all, scarcely any rotation was possible, slight antero-posterior movements alone could be made voluntarily at the shoulder-joint. Passive motion was somewhat more extensive. He made an incision, three or four inches long, vertically downward from the acromion, opening the capsule and exposing the head of the humerus. With a hooked instrument, like one described by Dr. McBurney, inserted into a drill-hole made in the upper fragment, he tried to replace the head, but the bone was too soft, the hook tore out so that the head could not be moved in this manner. He was, therefore, compelled to divide capsular bands freely wherever there seemed to be any tension, and by means of blunt instruments used as levers and with his fingers was finally able to force the head into the glenoid cavity. The shortening was considerable—two inches—the fracture was transverse, and he found it impossible to bring the fractured ends into correct apposition until he had removed about half an inch from each fragment. He then had broad bony apposition. The head of the bone was rotated inward, and as he could not rotate it outward he put the arm up in inward rotation, too. This explained why there is now greater inward rotation than normal, and outward rotation is limited. Primary union was obtained in ten days, slight passive movements were begun on removing the dressing at that time, and were practiced more freely and systematically after three weeks. At present he could lift the arm forty-five degrees from the vertical without motion of the scapula, and was constantly gaining. The attempts to secure motion had been interrupted for two or three weeks after he left the hospital by an accident to the elbow caused by a fall. It is now three months since the operation, and the functional result is excellent.—Annals of Surgery.

A Rare Sequela of Head Injury.

Gleich (Wien. med. Wochenschrift, May 23, 1896) records the following case. A man of 48 fell from a wagon and was run over; he did not recover consciousness till on the way to hospital, when he had no recollection of the accident, but appeared to have been drinking. There were two contused and incised wounds, one in the occipital region 1¼ inches long, but not reaching the bone; the other half the length, and implicating the auricular cartilage; both were covered with mud and filth. The pulse was 56, and there was some paresis of both upper extremities. The scalp wound healed readily, that of the ear suppurated; the pulse improved, but the appetite was bad, and the patient became weaker. Four weeks after the accident, the ear wound being almost well, the man had a sudden rigor, with temperature 103.4 degrees Farenheit and pulse 80. There was pain over the temporal muscle, and slight swelling above and behind the mastoid process, with slight facial palsy and pain and limitation of movement in the neck. Next day the symptoms had somewhat improved, but he was still quite apathetic; the ear wound was apparently well. Sinus thrombosis or cerebral abscess following mastoid suppuration was diagnosed, and the mastoid was opened, 15 to 20 drops of thick pus escaping. The dura mater was apparently healthy, but as it showed neither pulsation nor respiratory movements, and area the size of a shilling was exposed without anything further being revealed. Nothing more was done, as it was considered that should fresh symptoms arise an extension of the wound would be very easy. Recovery was uninterrupted, and four days after the operation pulsation of the sinus and respiratory movements of the dura were observed for the first time. The patient, who had previously been morose, became cheerful, and though healing was slow, he was, at the time of writing, well except for slight paresis of the left upper arm. Gleich comments on the rarity of infection of the mastoid from a wound of the ear, and adduces this case as an instance in support of Bergmann's dictum that the limits of a cerebral operation should be not the skull bones, but the healthy dura.

Notices and Reviews.

The American Year-book of Medicine and Surgery. Being a yearly digest of scientific progress and authoritative opinion in all branches of medicine and surgery drawn from journals, monographs and text books of the leading American and foreign authors and investigators. Collected and arranged with critical editorial comments by J. M. Baldy, M. D., C. H. Burnett, M. D , Archibald Church, M. D., C. F. Clarke, M. D., J. Chalmers Da Costa, M. D., W. A. N. Dorland, M. D., V. P. Gibney, M. D., Homer W. Gibney, M. D., Henry A. Griffin, M. D., John Guitéras, M. D., C. A. Hamann, M. D., H. F. Hansell, M. D , W. A. Hardaway, M. D., T. M. Hardie, B. A., M. B., C. F. Hersman, M. D., B. C. Hirst, M. D., E. Fletcher Ingalls, M. D., W. W. Keen, M. D., H. Leffmann, M. D., V. H. Norrie, M. D., H. J. Patrick, M. D., William Pepper, M. D., D. Resman, M. D., Louis Starr, M. D., Alfred Stengel, M. D., N. G. Stewart, M. D., and Thomson S. Wescott, M. D., under the general editorial charge of George M. Gould, M. D. Profusely illustrated with numerous wood cuts in text and 33 handsome half-tone and colored plates. Philadelphia: W. B. Saunders, 1896. Pp. vi-17 to 1183. Price $6.50.

In the preface to this magnificent summary of the year's progress, the editor says: "The general design of the work is to give physicians in a compact form an annual epitome of the new and progressive medical truths or suggestions published during the months of the preceding year from July to June inclusive. It is at present almost or entirely impossible for the specialist, even as regards his own department, to keep himself conversant with the tremendous literature in all languages and in a thousand periodicals." The editor goes on then to draw a distinction between a "summary of medical progress" and the "literary review of all published matter," and adds briefly that he has not attempted the latter problem. Indeed, he says, "Thousands of excellent articles have not even been mentioned, because our task has been to epitomize our knowledge. not to review text-books (unless containing original researches, new suggestions, and so on) or to abstract articles not written for the sake of new truth. We have aimed only to mention those ways that are or may be contributory to the progress of medical science and art." That the design has been fully and satisfactorily carried out goes without saying when we have said that Dr. George M. Gould is the editor and that the following gentlemen have assisted him:

General medicine is cared for by William Pepper, M. D., and Alfred Stengle, M. D., both of Philadelphia; surgery by W. W. Keene, M. D., and John Chalmers Da Costa, M. D., both of Philadelphia; obstetrics by Barton Cook Hirst, M. D., and W. A. Newman Dorland, M. D., of Philadelphia; gynæcology by J. M. Baldy, M. D., and W. A. Newman Dorland, M. D.; pediatrics by Louis Starr, M. D., and Thompson S. West, M. D., of Philadelphia, Pa.; nervous and mental diseases by Archibald Church, M. D., and Hugh J. Patrick, M. D., of Chicago, Ill.; dermatology and syphilis by William A. Hardaway, M. D., and C. Finley Hersman, M. D., of St. Louis, Mo.; orthopedic surgery by Virgil P. Gibney, M. D., and Homer W. Gibney, M. D., of New York City; ophthalmology by Howard F. Hansel, M. D., of Philadelphia, Pa., and Chas. F. Clark, M. D., of Columbus, O.; etiology by C. F. Burnett, M. D., of Philadelphia, Pa.; diseases of the nose and pharynx by E. Fletcher Ingalls, M. D., and T. Melville Hardy, B. A., M. D., Chicago, Ill.; pathology and bacteriology by John Guitéras, M. D., and David Riesman, M. D., of Philadelphia, Pa.; materia medica, experimental therapeutics and pharmacology by Henry A. Grffin, M. D., and Van Horne Norris, M. D., both of New York City; anatomy by C. A. Hamann, M. D., of Cleveland, O.; physiology by J. N. Stewart, M. D., of Cleveland, O.; hygiene jurisprudence and chemistry by H. Leffmann, M. D., of Philadelphia, Pa. The departmental editors have not only made wise and judicious selections of material, but have in most cases given careful and studied criticism of the new suggestions and have passed the needed judgment upon matters in dispute. The department of general surgery, under the skilful handling of Drs. Keen and Da Costa of Philadelphia, is wonderfully complete and well written, and the critical comments of these able teachers make it delightful reading. The entire work is well illustrated, but chiefly with simple wood cuts. The paper and press work are excellent and no physician can afford to be without the book. The chapter on general surgery alone is worth twice the cost of the book.

Rhymes of the States, by Garrett Newkirk, M. D., with drawings by Harry Fenn, after sketches by the author. New York: The Century Co., 1896. $1.00.

It is with peculiar pleasure that we acknowledge the receipt of this little volume for review, for every physician will certainly be glad to know that one of our number has written so

helpful a book for our children. Dr. Newkirk says in his preface: "It is no easy task to fix in mind the location, outlines, physical features and historical record of all the states of our American Union. The author has tried to reduce all these distinctive facts into the form of simple rhymes, easily impressed upon the memory, and accompanied by pictures which illustrate the ideas contained in the verses."

The verses are extremely simple but wonderfully descriptive. The sketches are truly artistic and many are particularly apt and suggestive and will undoubtedly aid greatly in impressing the geographical and historical facts upon the minds of the youngsters for whom they are intended. Besides an outline map of each state, making prominent the name and location of the capital and other chief cities, there is given a caricature sketch of some animal or other object which the state might be said to resemble in form. In addition to the verses and pictures, which have appeared in St. Nicholas during the past two years, certain prose statistics are now published, greatly enhancing the value of the work for instructive purposes. Among the facts given in regard to each state are the area, the population, the rank of the state according to population, the number of counties, the representation in Congress, the number of electoral votes, date and location of first settlements, when admitted to the Union, value of chief industries, popular name, etc.

The whole idea is quite unique and the book will be found equally attractive both to old and young. When we consider the number and quality of the illustrations we wonder how it is possible to publish the book for $1.00, for it is handsomely and durably bound and well printed on heavy calendered paper. The little volume will make an elegant and appropriate gift book and we predict for it a very large sale.

Blood Lavages in Surgical Infections.

P. Walton (Belg. Med., July 16) reviews this question. Dastre and Loye have shown that a venous injection of salt solution, amounting to even two-thirds of the animal's weight, may be made without accident, provided the entry be slow and well regulated.

At 7 per cent, or even 10 per cent, there is no toxic dose, but merely a toxic speed of introduction. Bosc and Vedel have shown that the addition of sodic sulphate to the solution has no advantages. By some surgeons enormous venous injections have been practiced. Lejars, in a septicæmic patient, injected 26 litres in five days without grave sequelæ. Michaux injects doses of 1,000, 1,500 and 2,500 grains a day. Péan and the author regard these as the maximum doses to be reached without serious risks, and Péan insists on the superior safety of subcutaneous injections in prudent doses as opposed to intravenous injections. The question of their mode of action is difficult and complex. The first result of either method is to restore arterial tension to the normal, and to lessen the frequency of the heart beats. Secondly, diuresis is markedly increased. Michaux has seen a few slight and immediate consequences, dyspnœa and pain in the side, and in one case, where 2,000 grains were thrown in at once, abundant serous vomitings. Sometimes complaint is made of a feeling of heat and tension. For venous injections, which are preferable if a large quantity of fluid is to be introduced, Michaux uses a glass funnel furnished with a rubber tube, to which cannula No. 2 of Potain's aspirator is fixed. The skin is cleansed antiseptically, a cut made over the median cephalic or basilic vein, which is then laid bare, and its peripheral end closed with Péan's forceps. The cannula, previously freed of air, is introduced into a V-shaped opening made by scissors in the vein. A forcipressure forceps keeps the vein tightened over the cannula. The temperature of the injection varies between 38 and 40 degrees C. As to hypodermoclysis, unless very slowly performed, a painful swelling may be produced in the subcutaneous tissue. By introducing only about a litre an hour this is avoided. The skin of the abdomen is suitable, and a very fine trocar should be used. Colson has used the latter method in two desperate cases with great success. Case I: Male, 28, with articular abscess of right knee, temperature 40.7 C., dry tongue, delirium constant. Free incision, drainage and daily sublimate irrigations, a purgative, alcohol, quinine. After two days the temperature, which had fallen to 38.6 degrees, rose to 40.2 degrees C. Dry tongue, pulse 130, skin dry and burning, urine scarcely a pint daily. Subcutaneous injection of 1 litre of 7 per cent salt solution. Two hours later abundant sweating, sensation of comfort, more abundant urine. The next day the disquieting condition returned. Fresh injection of 1 litre. Renewed improvement of symptoms. The injection was repeated for five days, and recovery ensued. In Case II the results were equally gratifying. Here 16 litres of salt solution were injected in the space of three weeks.—The British Medical Journal.

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WHY THE RAILROAD SURGEON SHOULD NOT TRY TO PRACTICE ASEPTIC SURGERY.

BY EMORY LANPHEAR, M. D., PH. D., ST. LOUIS, MO.

The railroad surgeon should not try to practice aseptic surgery in accidental work! This is perhaps an astonishing position for a surgeon to assume in these days of ultra-asepticism; but I believe it is the correct one. By the term "railroad surgeon" I do not refer to those few men who have all the resources of a modern hospital and who can choose the time, the surroundings and perhaps the field of operation for the cases they are called upon to treat; but to the common, every-day surgeon whose work is forced upon him in emergencies at the time of injury and who is even compelled to attend to his duties at the very place of accident. Under such circumstances is it right for him to rely upon asepsis alone? I answer emphatically, No!

I do not mean to insinuate, as a somewhat facetious member of this association remarked on hearing the title of my paper: "He shouldn't try because he doesn't know how." Far from it. I believe the progressive, earnest workers of this great body are thoroughly familiar with the fundamental principles of asepsis and most of them are competent to carry out the details so essential to success. To be sure there are doubtless a few who occasionally so far lose their presence of mind as to make serious mistakes now and then, such as using an instrument that has been contaminated by handling by somebody whose hands have not been sterilized; stopping to take a chew of tobacco and forgetting to thoroughly cleanse the hands after insertion in dirty pockets; allowing unwashed hands to touch the gauze to be applied to the wound

—a most common source of infection; feeling the pulse in a critical case and neglecting to again sterilize the hands before resuming operative work. All these and other similar derelictions may be noted here and there, for the technique of perfect asepsis such as seen in the work of Joseph Price, for example, is a habit which can only be acquired by long and patient toil, and maintained only by the most careful watchfulness. But I take it for granted that such operators are the exception, not the rule, and that consequently the reason assigned by my friend why the railroad surgeon should not try to practice aseptic surgery is not the correct one.

Further, I do not wish to condemn cleanliness in surgical work. It is, above all other things, the secret of success in our most hazardous undertakings. Indeed, under certain conditions and in certain classes of cases the surgeon must rely solely upon perfect, ideal asepsis to secure perfect results. Notably is this the case in abdominal and cerebral surgery, where, after the incision through the skin has been made, antiseptic agents must be ished. But to obtain the best results in most cases of acute trauma, something more than simple surgical cleanliness, something more than mere hot water, is essential. It is not right to depend upon asepsis alone; and in most of his operative work the modern surgeon has gone too far in attempting to depend upon asepsis alone. Antiseptics of known and tried value have been too hastily discarded in the desire to use nothing but hot water or normal salt solution, "the best antiseptic in the world," as has been erroneously said by some enthusiastic crank. In other words, we have been trying to do "aseptic surgery" where "antiseptic surgery" should have been practiced. Indeed, it has seemed as if in following the fashion set by Lawson Tait and Joseph Price, that is, in trying to apply the rules of abdominal work to general surgery, antiseptics were about to be relegated to "the glories of the past."

I myself have the greatest faith in antiseptics. The reason is not hard to give. I have seen too many cases get well, and without trouble, in the work of surgeons who were positively filthy in their methods, yet who used strong antiseptic solutions, to allow any doubt as to the efficiency of the medicinal agents employed. Antiseptics and prayer have saved many patients who would have died if the operators had relied upon asepsis alone. More than this, I have seen many times the most favorable termination in cases where dirt was ground into the wound, where death would inevitably have occurred had it not been for the life-saving properties of the antiseptic agents used. An instructive case in this connection was this:

George E., 24 years old, was struck upon the head on the morning of April 2, 1891. During the day he was seen by at least three prominent surgeons of the city, each of whom refused to operate because there seemed to be absolutely no hope of recovery. At about 4 p. m., six or eight hours after the injury, he was still breathing and partially conscious, and Dr. W. S. Allen asked me to see him as I had a reputation for doing operations against desperate odds,—if there was even one chance in a thousand, regardless of my "death rate;" or, as Dr. Allen put it: "You are noted for fixing up a mangled body so it will look well at the funeral." So I saw him at 6 p. m. At that time his appearance was frightful in the extreme. The whole scalp and pericranium were torn away, hanging by a narrow strip less than three inches across near the occiput. In the wound were cinders, earth and grease in such quantities that it appeared as if it never would be possible to clean the surface. The flange of the drive-wheel had struck near the coronal suture on the right side, driving the bone down into and badly mangling the frontal convolutions. A fracture extended downward into the orbit gaping widely, and blood was oozing from eye and nose. It was one of those cases of "diffuse injury" in which the text books direct not to operate. Nevertheless he was given a little chloroform by Dr. Callaghan and we proceeded to clean the wound. After scraping off as much as possible of the dirt and blood we industriously scrubbed with soap, water and a stiff brush, dried it and washed with sulphuric ether, then with turpentine, and finally with sublimate solution 1 to 1,000. We next washed the bone and brain for at least ten minutes with boiled water and then with saturated solution of boric acid. After removing all fragments of bone we trimmed up the brain and dura with scissors, cauterized such bleeding points as would not check on the application of hot water, 115 degrees, applied a very large quantity of iodoform, replaced and sutured the scalp and inserted large drainage tubes. About the orifices of the tubes and along the line of sutures an immense amount of iodoform was dusted and gauze wrung from 1 to 1,000 bichloride

solution used as dressing. Recovery was remarkable. The next evening, April 3, his temperature was 99, pulse 100, no paralysis and but little mental disturbance. The drain was removed on the fourth day, when his temperature and pulse were normal. The next day he insisted upon sitting up and on the fifteenth day after operation he was discharged in perfect health, although there was a very large opening in the skull. There was not a drop of pus visible at any time.

From such cases as this (and this is not an isolated instance) I draw the conclusion that when the operator is not sure there will be no break in the chain of surgical cleanliness, or where there is known infection of the field of operation, in every capital operation antiseptics should be employed in such quantities as to guarantee the safety of the patient. The lesson is more firmly impressed when, in a ward common to several surgeons, I see my patients treated in the manner this one was recovering without a symptom of local infection or inflammation, while upon adjoining beds are patients with wounds reeking with pus as the result of the attempt upon the part of some misguided and careless man who is relying upon so-called "asepsis."

Now do not misunderstand me. I do not mean the exclusion of attempts at perfect asepsis, or as near approach to it as possible in every operation of any magnitude. I believe it the duty of every operator to: 1st, boil all instruments in a strong solution of washing soda (sal soda) before every operation of importance; second, to sterilize his hands by thorough scrubbing for five minutes, drying them and trimming the nails down to the quick; then scrubbing again for another five minutes, then immersing them for at least one minute in alcohol, or if that be unobtainable, in turpentine, and finally in bichloride solution for a minute; or by the permanganate of potash and oxalic acid method familiar to most of you; and, third, to prepare the field of operation by practically the same cleansing process. Any surgeon who goes into a major operation without taking these precautions should be deemed guilty of malpractice and held responsible in case of an unfavorable result dependent upon septic processes. I repeat that this process should be gone through even for already infected wounds, but that in addition to it the operator should make use of certain antiseptic solutions during the progress of operation, for sponging purposes, for repeatedly washing the hands, for irrigation, etc., in every case where the wound is already infected or the possibility of infection during operation may arise.

But, says the skeptical one, why use all these precautions for a wound that is already infected, that already may be filled with pus? There are two reasons, one scientific, the other practical. As to the first, there are two classes of micro-organisms chiefly concerned in the production of inflammation and in pus formation: the streptococcus pyogenes and the staphyllococcus pyogenes aureus, or other variety of staphyllococci. These are entirely different in their mode of action, danger to life of the tissues and in other ways. Now if we have a simple staphyllococcus infection it may amount to little, possibly only to the appearance of what the old authors called "laudable pus" in the wound, and a slight amount of systemic disturbance; but if upon this, by careless methods or want of antiseptic agents, we engraft a streptococcus infection we render the inflammation more spreading in its character and far more dangerous in degree because we have added to the wound that peculiar germ which under certain circumstances gives rise to erysipelas, under others to puerperal sepsis, and other grave disorders. On the other hand if we already have a streptococcus infection, and by our unsurgical measures permit conjoint infection with some of the staphyllococci, which possess strong peptonizing properties, the extensive infiltrate depending upon the streptococci will melt down into pus with wholesale destruction of tissue, perhaps with the development of a fatal septicemia. So the use of strong antiseptic or even germicidal agents is distinctly indicated in wounds produced by accident. As to the second, it gives better results than can be obtained by any other course; as in this case:

George R., of Independence, Kan., was admitted to the Baptist Sanitarium some three weeks ago, suffering with an old, discharging ulcer of the leg, due to trauma. Many ineffectual efforts had been made to heal it, but no cure seemed possible. Examination showed a large amount of dead tissue lying in the bottom of the indolent ulcer, infiltrated edges, a stinking discharge, etc. The ulcer was about one inch wide by two inches long. Under chloroform I shaved the leg, scrubbed the surrounding area and the ulcer itself, after curet-

tage of all the debris and weak granulation tissue. After most thorough scrubbing I dried the surface and then washed it with sulphuric ether; then applied a saturated solution of permanganate of potassium, rubbing it well into the sore, the edges of which were pared at the time of curettage; then applied strong oxalic acid solution until the stain disappeared and then hot water. After drying the wound it and the surrounding skin were washed with alcohol and finally with normal salt solution. I then completely excised the ulcer and all the underlying tissue down to healthy muscle. This left a wound two and a half inches wide by four long which had to be closed. Two six or seven inch incisions, one on either side at a distance of a little more than two inches from the margin, allowed the two edges to be brought together without much traction on the ten sutures introduced. The central wound was then hermetically sealed with iodoform collodion, and the two widely gaping ones closed by Thiersch skin graft from the thigh. Healing by primary union has been secured in the site of the old sore and the "side issues" are nearly well, without one drop of pus and no other sign of inflammatory reaction.

This is an undoubted triumph of antiseptic surgery. The excellent results can be ascribed to nothing else. It required nearly two hours to complete the work, but the success is worth the trouble. It is, however, in cases of minor surgery that I must urge reliance upon antiseptics, together with all possible cleanliness.

Most of the minor injuries with which the railroad surgeon has to deal are inflicted at a time when the surface which is the site of trauma is dirty, often foul; further, in the accident itself septic material is very apt to be ground into the tissues. Here is the condition which calls for the strongest possible antiseptic agents. It will not do to try to rely upon cleanliness alone; it is insufficient. By employing the strong antiseptic remedies after cleaning the wound as thoroughly as possible we may frequently get healing by primary union where it would seem that such a result would be impossible. To illustrate:

March 21, 1896, a boy was brought into my office suffering from a crushed finger. The accident occurred while the hand was very dirty and in such a way that a lot of earth was pressed in among the fragments of bone and injured skin, tendons and muscles; at first glance a wound that would necessitate amputation, but upon careful examination I found the blood supply still good and determined to try to save the finger. With complete anæsthesia I scrubbed the wound itself very carefully with ethereal soap, itself a good antiseptic; then trimmed away all ragged fragments; then washed with alcohol, rubbing it into all the interstices and between bony fragments; then saturated it with boro-lyptol, the latest germicidal agent, which consists of a five-tenths per cent. solution of formaldehyd in combination with boro-glycerid, eucalyptol, etc., a most valuable association of antiseptic drugs. Using this also to wash away the blood during subsequent procedures, I sutured the skin and other tissues into place with catgut, introduced catgut drains in two or three directions and applied a dressing of bichloride gauze saturated with boro-lyptol. As there was no pain and no fever I did not remove the dressings until the twelfth day, when I found that primary union had occurred. A gauze dressing on a finger with a splint for support to the injured bone constituted the sole remaining treatment.

Now from my observations in the work of those who are treating such cases by "asepsis" alone I am sure I would have lost this finger if I had not employed the strong germicide, or at least antiseptic agents and dressings. The reason is not hard to understand. Howsoever industriously we may labor with soap and water and scrub-brush we cannot rid the wound of the pus-producing germs which have been introduced before the wound is seen by the surgeon. "Nor can we reach and destroy them by antiseptic solutions," exclaims the exponent of asepsis. That is quite true. We who advocate the use of strong antiseptics do not expect to kill the germs already in the wound—that is not at all the object of their application. Nature can readily take care of the few micro-organisms which have found lodgment upon the tissues. The purpose of the antiseptic agents and the antiseptic dressings is to prevent the development of more germs from those already there. The life history of this species of plant life shows that the pyogenic bacteria increase with an almost incredible rapidity under favorable conditions, and infective troubles arise not from the original seed, but from the wondrous crop that soon follows if the soil and surroundings be propitious. The use of simply sterile gauze or dressings saturated with normal salt solution, as urged by Professor Outten, gives a most favorable soil and surrounding for the development of pathogenic micro-organisms; whereas the application of antiseptic dressings following an antiseptic

operation will completely arrest the growth and propagation of the dreaded germs,—that is, we render them sterile, innocuous. Possibly in the hands of an Outten it may be possible in most cases to secure such perfect cleanness of the infected field so as to give primary union under simply sterilized gauze; but even in his work the employment of the antiseptic plan would do no harm, while in the work of men less careful in practice or where surroundings are less favorable than those in which his patients are placed, it is imperative.

It will be noted that I have advised the use of sublimate gauze as the dressing for all infected wounds. This has been done purposely, for the use of iodoform gauze has become entirely too common. Iodoform gauze is not strongly antiseptic; in fact iodoform powder is not germicidal at all, though it does act advantageously in preventing the rapid proliferation of pus organisms by its drying (and other) properties; so while it is a most valuable dressing for aseptic wounds, particularly when a considerable amount of wound secretion is anticipated, it is practically valueless in a wound already infected. But bichloride gauze not only sterilizes the little air which passes through to the wound surface, but effectually prevents the increase in the number of the microbes which may be in the serum escaping from the seat of injury.

Now please understand the position I take. In every wound made by the surgeon himself (under favorable circumstances) asepsis is perfectly safe and should be invariably practiced, as it is the ideal method, and gives the best results in careful hands.

But in every accidental wound and in operations where it is impossible to secure and maintain perfect asepsis (such as operative procedures in already infected tissues as well as in the rectum, etc.) reliance must be placed upon antiseptic agents.

In conclusion, I wish to repeat that however fascinating it may be to see a Joseph Price simply scrub his hands with soap and water, prepare the field of operation in the same way, use nothing but boiled water upon his sterilized instruments, and apply only sterilized gauze as a dressing,—in other words, relying upon perfect asepsis to secure perfect results,—it will not do to follow his example in managing the cases which usually come to the railroad surgeon. To use the words of the title of my paper: "Railroad surgeons should not try to practice aseptic surgery in emergency work," because better results can be obtained by recourse to antiseptics.

DISCUSSION OF DR. LANPHEAR'S PAPER.

Dr. Geo. W. Crile: I do not know that I can add anything new to this subject, but I wish to say a few words relative to some of the points brought out by the essayist. With reference to what has been said on the question of asepticism and antisepticism, I will say that it is necessary for the competent surgeon to use one or both, although many will try to reach asepticism through the agency of antisepticism. First of all, I would say that we must not lose sight of the fact (in the process of repair) that the tissues repair themselves by their cellular action and reproduction, and cells can only repair themselves when properly nourished. The only proper food for the cell is the serum of the blood. I maintain that in our efforts to carry out asepticism we should in all cases avoid the uses of douches, of using water and saline solutions. If we use normal saline solutions on a wound we dilute the food upon which the cells live, and the ideal method of repair in a wound is by making use of the normal food—the blood plasma. It is better, in my judgment, to dry the wound, make absolutely perfect hemostasis and leave no so-called dead spaces in the tissues. Do not douche the parts with saline solution.

As to antisepsis the same thing holds true. Bichloride of mercury in strong solution will precipitate the food upon which the cells depend and will certainly do much damage in the hands of one who is inexperienced with its use. In infected cases use bichloride of mercury, but use it in small quantities.

Dr. W. H. Elliott: I believe in this matter Dr. Lanphear has taken the correct position, and were it left to me for decision, I would state the case in these words: Asepsis when you can; antisepsis when you must.

Dr. Fulton: I am not on my feet to discuss the paper, for I believe there is nothing to discuss. Its title was misleading. He gave us a title but did not follow it out. The practice of antisepsis in railway surgery is always a necessity. The practice of antiseptic surgery in Mr. Tait's practice to which Dr. Lanphear referred is not necessary; that is to say, antisep-

tics are not necessary in the practice that Mr. Tait follows. He is not dealing with the kind of cases that railway surgeons encounter, and when we discuss a question like this we probably discuss it from one standpoint. If we discuss it from the standpoint of Mr. Tait's work, we will practice asepsis, but if from the standpoint of the railway surgeon, who cannot get his patient in an aseptic condition prior to operation, he must, in addition to aseptic precautions, practice antiseptic surgery. Everybody knows that, and there is no dispute upon that point.

Dr. S. S. Thorn: It seems, from the investigations and researches of Lister, Pasteur and other biologists, from whom we have learned so much, that the germs are not autogenetic. They must be planted in order to be there. I do not believe that railway dirt, such as oil and other stuff that comes from the cars and track, is necessarily pathogenic. If we have pathogenic germs we should treat our cases antiseptically. If we have not, then all that work is unnecessary, and not only that, but positively injurious. We have all seen the pendulum swing to the other side, and we have followed it there. That pendulum is back again and is going the other way. I do not for a moment deny the benefits that have come to railway surgery from the antiseptic work which has been done, for we all know that we were surrounded by filth from head to foot at one time, and surgeons then were not so particular about cleanliness of person as they are now. At present we go into our cases reasonably clean. I am opposed to any cast iron rules. There are no cast iron laws to govern our manipulations and treatment.

Dr. P. Daugherty: Like Dr. Thorn, I practiced surgery when we did not use antisepsis or asepsis; when we had wounds reeking with pus, and it took not only days, but weeks, for the wounds to heal. I do not care about going back to the old days any more. I agree with Dr. Lanphear in the main, and could cite, if necessary, cases illustrating and substantiating the points he has brought out.

Dr. MacCrae: It seems to me that Dr. Lanphear's paper is correct in every respect, and that Dr. Outten's paper of last evening is a dangerous one to be promulgated before a society of this kind. All cases of injury on the railroad track are septic. If they are not septic we cannot prove that they are not so. We should treat them as septic cases. What has made surgery what it is to-day? Antiseptics. As we learn more and more of these things, we resort to antiseptics in order to make ourselves aseptic. It is impossible to perform an aseptic operation without the aid of antiseptics. I hope no gentleman here will go away from this meeting and try to render injured limbs aseptic without the use of antiseptics.

Dr. James T. Jelks: It is an accepted fact among modern surgeons that the micro-organisms of inflammation are everywhere, in the dust we breathe, and in the dirt beneath our feet. It must be a fact that the dirt of the railroad track and the oil with which it is mingled, is septic. We have acted on that basis for thirty years, and the results have been marvelous in modern surgical work. One gentleman has said that the pendulum is swinging the other way, and that we are attempting to foist upon the profession aseptic surgery in septic cases. If we have an operation to do in a clean peritoneal cavity, it is an accepted fact that we should not pour antiseptics into that delicate cavity. We all know that, and hence should not bring Tait's dictum, or that of Joseph Price into a congregation of railway surgeons. All of our cases are septic. Antiseptic precautions in lacerated, infected wounds are the only road to safety.

Dr. Lanphear (closing): I am astonished at the unanimity of opinion of this association after hearing the paper of Dr. Outten last night and the enthusiasm which it seemed to provoke. I wish, first of all, to give attention to the remarks of Dr. Fulton. He says there is no dispute about this subject. Surely he is not familiar with the work of men in this city, or he would have heard the cry of those who are clamoring here, there and everywhere throughout the land for the hot salt solutions exclusively. Men are advocating in this city the use of nothing but hot water and soap and brush in preparing for operations. The same thing is being done in Chicago. It is being done in Junction City, where Dr. Daugherty lives. It is being done everywhere and it is a dangerous thing.

In reply to the assertion of Dr. Thorn that we must have no cast iron rules in operative surgery, I will say that we are dealing with cast iron laws as fixed and immutable as the

laws of the Medes and Persians—those laws which govern the life history of micro-organisms and which are known to bacteriologists and the experienced surgeons of to-day. We must perforce adopt cast iron laws, and the rules which I have enunciated in my paper are the ones upon which we can safely rely in the treatment of infected wounds. No man advocates the use of antiseptics (except for preparation) in the treatment of wounds which are to be produced by the surgeon himself. The surgeon who understands his business knows this. It is to oppose the use of asepsis in accidental surgical work that I am here to-day.

Lastly in reply to the remarks of Dr. Crile. He has told us that blood serum is the best germicide in the world. Very true when it is in the blood vessels but when the blood serum is upon an injured surface, it constitutes an ideal culture field for the growth and development of micro-organisms, and unless we can counteract the microbes which are there; unless we can render the germs sterile, incapable of reproduction, we will have mischief in 99 cases out of 100 infected wounds. We must rely upon antiseptic agents.

And now, in conclusion, I want to say that if with my paper I have caused one little doubt about the propriety of relying upon asepsis alone to linger in the minds of the members of this association, over which they will ponder as they wend their way homeward, and will put their thoughts into practice in their work I will have been amply repaid for my time and trouble. (Applause.)

INFLAMMATION OF BONE.

By Andrew L. Fulton, M. D., Kansas City, Mo.

In discussing inflammation of bone tissue it will doubtless be suggested by some of the members of this society, and with some degree of truth, that I cannot refrain from showing my heretical tendencies in attempting to pervert the true faith, inasmuch as I propose to take issue with well recognized authorities on some points regarding this particular inflammation. I invite, and shall expect, adverse criticism, which, however severe, I hope will be kindly.

Inflammation of bone tissue presents the same phenomena characterizing inflammation of other tissues, and the same pathological changes, and there is no particular difference in the cause,—all inflammations depending upon a pathological condition. Although the focus of infection is usually in the medullary canal or medullary substance in the cancellous tissue, the entire structure, medulla, bone and periosteum, is soon involved in the process. It is of little consequence, therefore, where the focus of infection is from a clinical standpoint; but from a medico-legal and an etiological consideration it is of paramount importance to the railway surgeon and corporation whose rights he is supposed to protect from the too often unscrupulous claimant.

In the few remarks I desire to make on osteo-myelitis I shall confine myself to the discussion of the so-called spontaneous suppurative osteomyelitis and to the tubercular variety of osteo-myelitis. As to the cause of these classes of inflammation there have been differences of opinion which seriously affect the right of both corporations and individuals. There is scarcely any dispute regarding the etiology in cases of direct traumatic, suppurative osteo-myelitis, and it is generally conceded that the cause of spontaneous osteomyelitis is the arrest of infected micro-organisms that have made their way into the circulation from a more or less remote suppurative process or abscess cavity, a metastasis as it is called, or, through the intestinal tract or mucous membrane of the respiratory tract. Consistent with this I have for several years held to the opinion as a reasonable and logical conclusion that the tubercular type of inflammation has its origin in and is conveyed to a locus minoris resistentiæ from an antecedent pathological condition. I shall further assume, and not without good clinical evidence, that the suppurative and tubercular character of inflammation respectively present the same anatomical features and like conditions as to the age of the patient and the point of infection. I thus briefly outline the basis of argument, that if the one is not due in any sense to a slight trauma without a wound, the other, namely tubercular osteo-myelitis, will justify the same conclusion.

Acute spontaneous suppurative osteomyelitis is almost exclusively confined to children and young adults prior to the bony union of the epiphysis with the diaphysis, and next to

the tubercular inflammation is most frequent of all inflammatory disease of bone. The point of departure of the disease, or the focus of infection, in these cases is either in the medullary substance in the canal of the long bones or in the same substance in the diaphysis near the epiphyseal line. The anatomical peculiarities of bone in children favor the development of the disease. The large, dilated capilaries, active circulation and what seem to be terminal or end vessels of the diaphysis at its junction with the epiphysis are anatomical conditions favorable to the arrest of the infected leucocytes or emboli; the morbid process having originated in this way in the medullary tissue, extends to the bony structure or adjacent bone tissue, then to the periosteum and para-periosteal tissue, and forms an abscess which marks the progress of the disease.

Aside from the cases in which we have direct infection from compound fractures or wounds, the cause of the suppuration is obscure. It is a well known clinical fact, however, that exposure to cold from bathing in cold water, over-heating and rapid cooling, lying on damp, cold ground and the like, may cause apparently healthy children to suddenly contract suppurative osteo-myelitis. I may add in this connection that there seems to be something still unknown regarding the character, origin and cause of pus formation where there is no external wound open, fracture or pre-existing suppuration elsewhere. We know from clinical experience, however, that acute attacks of suppurative osteo-myelitis may occur at any time without the slightest apparent cause, running a rapid and very destructive course. The reason for the entrance of the pus microbes into the general circulation is a matter of great wonder, but the fact that the micro-organism is carried to a particularly vulnerable issue is not so strange.

The following clinical features usually constitute the picture of a typical case of suppurative osteo-myelitis. The Child, or young adult in ordinary good health, is suddenly seized with severe pain at or near the epiphyseal line of a long bone; a chill almost immediately follows. The pain increases and becomes excruciating and is of a throbbing character, and while the pain is not exclusively confined to the focus of infection, it is sufficiently limited to direct our attention to the area involved, knowing, as we do, that as a rule the primary infection is at or near the distal side of the epiphyseal line, where there is a positively well-defined point of tenderness on pressure, marking the involvement of the periosteum. All the symptoms of inflammation will not be observed until the soft parts are involved on account of the infected focus being walled in by the bony structure surrounding it. In the cases where we have neglected surgical interference, or have been mistaken in the diagnosis, we will be guided by the continuous rise of temperature and the distressed appearance of the patient (typhoid symptoms), symptoms that should always be looked upon with suspicion. The swelling, redness, etc., are absent in the early stage of the disease on account of the primary inflammation being located in the interior of the bone, but as soon as the inflammatory product has tunneled through the osseous tissue, all the other symptoms of inflammation and suppuration are at once manifest. These symptoms should never be allowed to supervene unprotected by surgical recourse. I have frequently observed these clinical features developing rapidly in children who had been exposed to cold, and terminating in the formation of large pus cavities, without suspicion of anything except ordinary malarial fever. In these cases there was positively no assignable cause, except the spontaneous development through the agency of the pyogenic cocci. No history of injury of any kind having been observed.

Tubercular osteomyelitis, while much more common than suppurative inflammation, often terminates in the same way that acute suppurative osteo-myelitis does. It is, however, essentially chronic in its nature. The only real difference between the two diseases is a pathological and an etiological one. Instead of the destructive pyogenic cocci incident to suppurative myelitis, we observe the tubercle bacilli which transform the normal connective tissue cells into embryonal or granulation tissue cells. The subsequent course after the focus of infection is established depends much upon the extent of the inflammation and rapidity of its course. The tubercular disease may pursue a course quite like suppurative osteomyelitis when the inflammatory product far exceeds the resorption capacity of the granu-

lation tissue, as may be observed in many of the cases of hip-joint disease. The only diagnostic symptom in such cases, in fact, in any case, is the presence of the tubercle bacilli. When we have mixed infection—pyogenic cocci and tubercle bacilli—we should be able to demonstrate the pus micro-organism and the bacilli of tuberculosis by culture. Who would venture to assert that tuberculosis was present when no specific micro-organism can be found? In other respects, such as the anatomical conditions, the age of the patient, and the area of infection, there is little difference between the two diseases. In our clinical observation, however, we may be able to distinguish fairly correctly by the acute attack, the great pain and the higher temperature in the suppurative variety, as compared with the chronicity and lower temperature, with an evening rise and failing health, due probably to a primary infection elsewhere, denoting secondary metastatic tuberculosis in the medullary substance of the bone.

So far as the etiology is concerned I claim that no case of tuberculosis depends upon trauma, slight or severe. It has not been claimed that tuberculosis of the lungs or other glands depend upon traumatism as an exciting cause, yet bone is of the same histological structure and presents the same pathological change as lung tissue and infection in both is the same. There is no doubt in my mind that the medulla of the diaphysis is the most susceptible to tubercular infection of any of the anatomical structures in children. Authorities, in speaking of tuberculous bone use the stereotyped expression, "it is often due to slight trauma;" in other words, a trauma that has not been observed. Taking into account the anatomical features already spoken of in connection with suppurative osteo-myelitis, and the deep-seated point of infection, I have always been constrained to believe a slight injury is simply the means of calling attention to an existing focus of infection in the medulla of the diaphysis of bone and has nothing to do with the origin of the disease. The tuberulosis has been established. Slight periosteal inflammation has set up over the focus of infection in the medulla, and an insignificant blow merely marks its location. Tuberculosis does not develop where a child is apt to sustain an injury. Moreover, if it were due to trauma, children running about striking against this or that a hundred times or more in a day, would be quite liable to contract tuberculous trouble of the bones. On the contrary, exceedingly few children are afflicted with tuberculous disease of bones compared to the large number who contract other diseases when exposed. It is fair to presume that if it is ever due to slight trauma it would commence in the periosteum or more compact tissue of bone, a location where we seldom, if ever, find the disease primarily. I maintain that it depends upon a predisposition and pre-existing tubercle that finds a vulnerable structure where the infection is lodged, and the reason we attribute it to slight injury is that there is a tender spot, a diagnostic symptom, on deep pressure of periosteal inflammation having been established following the disease in the deeper portion of the bone tissue, namely, the medullary substance. The patient, in running about, probably strikes the limb against something, over the point of tenderness, and in this way makes hs first complaint, through which the disease is attributed to that special injury, when such injury had nothing to do with the origin of the disease, except in a damage suit for personal injury.

Tuberculosis of the lungs, lymphatic glands and other organs in the interior of the body is never considered to be due in any sense to traumatism. Then why should the bone tissue alone be singled out as an exceptional example of insignificant injury as an exciting cause? A severe trauma, which might invade the medullary substance in the central canal or the cancellous tissue in its interior where the tuberculous focus is implanted, would be a more rational conclusion in ascertaining the cause.

The diagnosis and treatment of bone inflammation is a matter of the greatest importance to the patient. There is no surgical disease necessitating early treatment so positively as osteo-myelitis, and the older the patient the greater is the necessity for prompt early treatment. Radical measures in both suppurative osteo-myelitis and tubercular osteo-myelitis may save not only a large destruction of tissue, but the life of the patient as well. In all suspicious cases of bone disease the surgeon should be constantly on the watch for the development of inflammation, and as early as

possible, after the first evidence of tenderness serving to locate the infected area is observed, surgical interference should be resorted to, either by means of parenchymatous injection of iodoform emulsion, or the more radical operation for the removal of the limited foci in the medullary substance. There is no possible means of escape for the non-absorbable product of inflammation except by penetrating the bony structure externally, then the periosteum, and finally the para-periosteal tissue. This in young adults is often quite tedious, and very great destruction may occur before nature has accomplished the necessary results to effect a cure. It is in these cases that we should be particular in making our diagnosis. Pain and tenderness, with constitutional disturbance, are usually the only symptoms in the early stage of the disease that furnish a guide to its location, and as soon as we are reasonably certain that we have an inflammation we should at once prepare for surgical operation.

The preparation in these cases should be quite as thorough as if we were preparing for an abdominal section. Perfect cleanliness, and the use of antiseptics cannot be too strictly observed. The point of infection having first been detected and the field of operation rendered absolutely aseptic, and the limb if possible rendered avascular, an incision should be made down to the bone. This should be trephined and the product of the inflammatory process cleared out, after which the bone cavity should be filled with iodoform, and the wound packed with iodoform gauze and closed up, with the exception of the drainage opening.

This, briefly, is the manner of treating bone inflammations or abscesses, whether the inflammation be due to pyogenic cocci or the bacilli of tuberculosis. Dr. Nicholas Senn's apparatus for forcible injections of iodoform emulsion is very useful in cases of limited tuberculous foci. Even if we are mistaken in our diagnosis little harm, if any, will be done, by the operation carefully performed. If the inflammatory trouble exists great benefit will be accomplished, and much tissue saved that would under other circumstances have been destroyed by the destructive inflammatory process, to say nothing of the danger to the life of the patient.

Allow me to further suggest that the time is at hand marking an epoch of personal damage suits when railway and other corporation surgeons, of whose number I am not, must go on record for or against the theory I now advance. My record was made up long ago, and as an expert witness in various courts of justice I have earnestly and honestly taken the stand enunciated in this paper, and have earnestly contested controversies against great odds, and have succeeded in saving corporations from very heavy damages in many cases, and the information and clinical evidence I have recently obtained on the subject has still more thoroughly convinced me that my position is correct.

In conclusion I desire to emphasize a few salient points.

First—Neither spontaneous suppurative osteo-myelitis nor tubercular osteo-myelitis originates in the compact tissue of bone primarily.

Second—The structures involved in the primary infection in each are exact anatomical counterparts.

Third—The conditions under which the infection originates are alike.

Fourth—The infection in both forms of inflammation is conveyed to a locus minoris resistentiæ, under like conditions.

Fifth—The area of bone tissue involved is far remote from the part where a slight trauma could obtain through the blood current.

Sixth—The infection and inflammation always exist prior to the injury supposed to produce it.

Seventh—Restitutio ad integerum without the formation of an abscess never occurs.

Eighth—To preserve bone tissue and protect the health or life of the patient an early and thorough operation is imperative.

DISCUSSION OF DR. FULTON'S PAPER.

Dr. Evan O'Neil Kane, Kane, Pa.; I heartily agree with the doctor that there is something more to look for than mere trauma in the bone troubles that we encounter. The disease sometimes starts at the end of a stump, and annoys us when we thought we had an excellent flap. Undoubtedly tubercular disease does a great deal of damage, both in children and in adults, but I would go further than the doctor in trying to get at the root of the difficulty. When I get a brakeman or other rail-

way employe whose limb is badly crushed, I put him through a careful questioning, and endeavor to ascertain the condition of his blood, determining whether or not there be any hereditary predisposition to disease. I put such patients on mixed treatment, where I find I cannot rely on their statements, and see how they get along, and I find by the use of iodide of potash, in full doses and minute doses of mercury, that most of the diseased medullary cavities are avoided, while formerly I had a great deal of trouble with them.

Dr. P. Daugherty: While I was very much pleased with the paper, I cannot agree with the position taken by the doctor. I believe that most of our bone troubles in childhood and youth are the result of trauma. In childhood the boy or the girl is continually falling and climbing and constantly bruising himself or herself, as the case may be. In order to produce a disease of bone we probably have to have more than simple trauma, however; we must have a predisposition to that disease. What I mean by predisposition is simply an inherited tendency of the parts to certain diseases—tissues that are prone to take on certain forms of inflammation. Then with the trauma you get a locus minoris resistentiæ; your inflammation is set up. This is the position I took three years ago in a paper presented before the Golden Belt Medical Society. Dr. Hilton, in his "Pain and Rest," gave me the first ideas in regard to these things. His idea was that in case of coxalgia we should place the patient upon his back, apply extension to the limb, keep the patient there for six or nine months, and give no treatment whatever except to feed him well. He got fat in this way by simply physiological and mechanical rest. There is a good deal in it.

Dr. Martin: Dr. Fulton in his paper claims that the cause of this disease lies in the vulnerability of the part, through the predisposition of the patient. While that is undoubtedly a fact, yet may not the trauma still further increase the vulnerability? May not the trauma still further reduce the already feeble resisting power of the part? He says that tuberculosis of the lungs is never attributable to a wound. While that may be the case, does it not frequently owe its inception to an attack of pleurisy, pneumonia, or some inflammatory affection? The inflammatory affection does not set up the tubercular process, but by overcoming the resisting power of the parts, it allows it to take hold of the part, and in that way is a cause of the disease.

Dr. Hungate: This subject is interesting to me, and I must compliment the doctor in expressing my ideas about the matter. I am satisfied that it is the proper way of looking at this subject. I do not believe that inflammation of bone is due to trauma alone, but that there is a pre-existing condition which develops diseases of bone, more especially that of tuberculosis. The lamentable ignorance that is exhibited by the ordinary practitioner was made manifest in a case that came under my observation. The history was this: A little boy was taken with diphtheria; a country doctor was called, and said he had "something that would cure diphtheria every time." After receiving treatment the boy did not get well. He had a lump in the side of the jaw, but the physician told him that it did not amount to anything. He complained of pain in his hip and knee, and it was supposed that he had fallen off a fence or was hurt in some way. The boy was taken to another doctor, who was asked to explain the cause of the pain in the hip and knee. He replied that it was a "growing pain." This temporarily satisfied the parents, but the boy grew worse. He was then taken to another physician and treated for rheumatism or myalgia, without relief. A third physician was called and placed the boy on his back for six months until he was nearly worn out. He got a little better, but did not get well. The case eventually proved to be one of tuberculosis of the hip-joint. It was plain to anyone that the disease was due to a micro-organism which had existed in his system all the time; that the diphtheria was only an incident. After resorting to parenchymatous injections of iodoform emulsions, and establishing free drainage, under antiseptic precautions, the boy recovered.

President Murphy: This subject is so extensive that to intelligently discuss it would take us all the morning. But there are some points about it that should be brought out, and first in regard to the history of the two classes of cases mentioned in the paper. In the make-up of the history you do not need to have a microscope in your vest pocket to make a diagnosis. There is a classical course for a large proportion of these cases, and if you get them early you can make a diagnosis from that course.

I agree with the doctor that there is a pre-

disposing cause, but we are convinced by researches that these microphytes are in the circulation almost all of the time. They are taken care of; they do no harm; they are eliminated by the emunctories, and we go on as though nothing was wrong with our system. But the very moment the microphytes are placed under favorable conditions for their growth and multiplication, trouble begins. I have never seen an acute osteomyelitis of the shaft of the bone. I have seen an acute diffuse osteomyelitis before we knew whether it was due to tubercle, the staphylococcus or streptococcus. But the position is the same. There is a weak point in the bone at the junction between the epiphysis and diaphysis. The two cases are just as opposite as day is from night. Take a child three, four or ten years of age, which is playing and falls on the floor and sustains a slight injury. If that child is going to have tuberculosis it will not be sick the next day, but it will be in three months from that time, because it takes three months' time for the disease to develop to any marked degree. Take the opposite picture. A lad falls on the floor, receives a slight injury, or a boy in skating falls down on the ice, and the next morning he does not feel well. At night the temperature is 102 degrees, the next day 104 or 105 degrees, and the boy is delirious and has a dry coated tongue—that boy has osteo-myelitis. He has pain. You may call it rheumatism. If you examine the joint you will find it has no effusion. Examine it above the joint or below it, depending upon the position. The knee is a common position for osteo-myelitis, and that is the reason I take it for an example. Examine above and below the joint, and you will find he has tenderness. Wait until the second day and there is more tenderness on deep pressure. Press upon the affected joint for two minutes and the pain is really unendurable. On the fourth or fifth day the pain is not so great, he feels better, but his leg is sorer. What has happened? The osteomyelitic center which he had here, which was encapsulated within the bone in the beginning, as it enlarges destroys the line for escape it follows along the artery and escapes beneath the periosteum. As soon as tension is relieved his leg feels better. If you have an acute infective osteo-myelitis of the surface of the bone beneath the periosteum it is exactly the same as this. The pain is central and the symptoms of sepsis continue as long as there is pain.

Dr. Fulton (closing): I am somewhat disappointed in not having had more criticism or more opposition to the views enunciated in the paper. I want to make one remark to the railroad surgeon, and that is regarding trauma as an exciting cause of tuberculosis. You have got to meet it in the near future. This is an epoch in which we have a craze for trying to get something for nothing, because times are hard. In the city in which I live (Kansas City) damage suits to the extent of over $300,000 dollars have been brought by people against the city, on account of slight injuries received from falling through sidewalks or broken boards, or some imperfect pavement. The people have now dismissed the old idea of Erichsen's disease of the spine, because it has been practically exploded. Now they have got another craze, and that is the craze of bringing personal damage suits for tuberculosis, and you have got to meet them. I have been meeting them for several years. I have taken a positive stand that there is a predisposition, as illustrated by Dr. Murphy's diagram, in other words, an anatomical peculiarity of the bone—a vulnerable point, a locus minoris resistentiæ—the cause of the peculiarity of the circulation at that particular point in children and young adults.

Dr. Daugherty remarked that in connection with trauma, as a cause of tuberculosis, children were constantly climbing over everything, up trees and over fences. We have done it ourselves. We have all more or less been climbers here and there. How many within the sound of my voice have contracted tuberculosis? If tuberculosis had its exciting cause from these injuries, I am free to believe and to confess that I would find a hundred cases of tuberculosis of bone where I find one to-day. They are very scarce. We see them but rarely. There is another cause, namely, the anatomical peculiarity of bone. The micro-organisms floating along in the blood are arrested in their course at this point in the anatomy of the child, and osteo-myelitis is thereby set up.

Regarding the use of iodoform, I have been using it a long time and still believe in it. I do not know how it acts. But I know one thing, that I have taken cases which have resisted all other plans of treatment for years, and have injected iodoform and obtained most magnificent results at once. I believe there is

no better proof of the character of the pudding than the eating thereof. While I continue to have this success with iodoform I do not feel like giving it up.

REMARKS ON TRAUMATIC NEUROSES RESULTING FROM RAILROAD AND OTHER ACCIDENTS.*

By John Punton, M. D., Neurologist to the Missouri Pacific Railway, Etc., Kansas City, Mo.

In perusing the published transactions of this organization, I find that the subject of "Traumatic Neuroses" has already occupied so much of its valuable time that I hesitate to further tax your interest and patience in its behalf. Nevertheless, various views and opinions are constantly being presented for our approval to account for the intricate and varied phenomena associated with such obscure neurotic lesions, which have both a general as well as a special significance, as they appeal not only to the knowledge and judgment of the neurologist, but also to every medical practitioner. This fact, taken in connection with the extreme importance of the subject to all parties concerned, is my only excuse for provoking its further discussion.

In this age of rapid advance and enterprise in all departments of learning, the desire to introduce novel and original ideas in regard to disease and other kindred phenomena has become so very prevalent and contagious that there is a strong tendency in our day to entirely ignore the more settled facts of medicine by this modern illogical yearning for something novel, even if it be ever so far-fetched and radical, besides abstract and equally unreliable. In view of this, is it any wonder that I hesitate to call your attention to a theme, which, above all others in medicine, affords a greater opportunity for speculation and conjecture on the one hand, and exaggeration and pretense on the other? The physician who attempts to write, or read, a paper on such a topic, without being able to advance something new and original, is liable to be branded as an out-of-date, non-progressive practitioner, and, at best, an old fogy; and yet, after all, gentlemen, what can be said of traumatic neuroses that is really new and original, at the same time practically beneficial, since the able presentation and discussion of this all-important subject by the different members of this society at its sixth annual convention, held at Omaha in 1893, together with the different views and opinions it has since called forth?

It seems to me that amid the erroneous and jarring opinions thus expressed, that many of the more important features pertaining to the subject are liable to be entirely ignored, and not given the attention they richly deserve, thus depriving many doubtful cases of their special significance and value. It will, therefore, be my aim to emphasize some of these, with a degree of partiality becoming their fitness as they appear to me, in the hope that if I err in my judgment I may be corrected.

In studying the history of trauma as a causative factor of nervous affections, I am led to believe that prior to the inauguration of this association, little was known in America concerning its subtle and pernicious influence on the animal economy, and much of the practical, tangible, scientific knowledge in regard to it, that we as a profession to-day possess, is largely the result of the combined labor and effort of the individuals comprising the membership of this very worthy institution we represent. In thus claiming for this association the credit it richly deserves in this department of medicine, I do so with becoming pride, in spite of the fact that to-day the necessity of our existence is being questioned, and we are openly accused of devoting our annual gatherings to purely social enjoyment, and that our meetings are wholly devoid of any scientific significance or value whatever, and, consequently, not worth so much as the consideration of a pass from the hands of the general managers of the different railways represented in the organization.

Without attempting to go into detail, however, a critical review of the history of my subject teaches me, that prior to Oppenheim's famous monograph, published in 1889, our knowledge of the subject was largely borrowed from our European colleagues, which, unfortunately, all admit, were largely based upon a very imperfect nervous pathology, and consequent faulty methods of classification, diagnosis and prognosis. A long-continued series of mistakes in diagnosis and prognosis by physicians on one hand, which was made the more

*Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., April 30, 1896.

evident by subsequent events and similar alleged wrongs based on these by railroad corporations on the other, rendered it clear to all that radical reforms were sadly needed, both in our medical methods of examination, and the legal adjustment of claims of persons suffering from nervous affections due to traumatisms.

Recognizing, therefore, the great diversity of opinion, as well as the evils arising from unjust and unsatisfactory methods employed in determining the full significance of trauma to the nervous system, this society was soon led to devote special attention to its unbiased consideration in the hope of improving and increasing our knowledge of the subject. Without any desire to unduly boast or flatter, I can only say that no one can study, thoughtfully, the published results of the work accomplished, more especially by Dr. Manley of New York, and, I might add, Dr. Levings on "Regeneration of Nerves," and many other members of this organization, without being convinced and satisfied that they not only contain valuable additions to our former knowledge, but also reveal skill and ability of research of undoubted merit, beside honest efforts to mete out unbiased justice to all parties concerned, thus establishing a more just system of scientific medical principles as a guide to the proper examination, care and management of such individuals. Moreover, by far the best, most complete and most unbiased work on the subject that has thus far been furnished the American medical profession, was written by our own Dr. Outten, and published in the second volume of Witthaus & Beckers' "Medical Jurisprudence." When these more perfect methods and principles, based as they are, on a more correct and rational knowledge of cerebro-spinal architecture, are duly compared with our former imperfect and faulty ones, and then again, applied clinically to the study of trauma and its effects on the nervous system, the valuable scientific work of this society, together with all its practical beneficial results, are readily seen, and at once prove the justness of my claim.

The great problem which has been the source of so much controversy and which defied solution by all former methods, was in determining the actual amount of damage done to the nervous system by traumatisms. On this hinged, also, the equally knotty question of permanency, nor is this strange when we remember, that just in proportion to our knowledge of the anatomy and physiology of a part does our knowledge of the symptomatology of its diseases advance. Not then, until we are in full possession of all the facts connected with structure and function can we ever be certain of the truth. The great aim, however, of all scientific investigation is to bring symptoms into connection with lesions, and this has been done to a remarkable degree of late in the study of the nervous system, chiefly along the lines of anatomy and physiology, with the aid of the microscope. Hence, it is not surprising that up till within quite a recent period, faulty methods of examination, classification and diagnosis obtained, and that the true effect of trauma was largely misunderstood. But today an ever increasing knowledge of the histological data of the nervous system at our command, as well as more complete and perfected means and methods by which to gain a thorough mastery of the questions at issue, greatly reduces our former formidable task, and in the vast majority of instances can be made to yield to the skill of modern medical science. Indeed, so remarkable has been the change in dealing with such cases that within the past decade a complete revolution has taken place in our nomenclature, classification, diagnosis, prognosis and treatment, the combined results of which has not only furnished us the means of detecting and defeating the most perfect fraudulent schemes, but at the same time offered just protection to the great railroad, and other similar interests involved, thereby demonstrating the remarkable efficacy of modern medical science.

One of the greatest stumbling blocks to all true medical progress is the misapprehension on the one hand and gross ignorance on the other, of the full interpretation and significance of medical technical terms. The tendency of modern science is to limit and restrict terms within specified boundaries, and failure to observe this great scientific principle has led to much useless and unnecessary argument. It also, unfortunately, brings with it reproach and condemnation undeservedly on the science of medicine from the laity, and they love to gloat over the apparent failures, and speak sneeringly of honest differences of opinion, and what

they please to call the inexactness of our science. Now much of this is due to our own ignorance, and we, ourselves, are chiefly to blame and not the science of medicine. While it is true that medicine is not an exact science, yet we are rapidly advancing, and much of our former inexactness is yielding to the mighty forces of modern medical progress.

In all ages, however, it has been found both useful and convenient to use certain terms to screen our ignorance of pathology, but just in proportion as our science advances these gradually lose their former significance, and eventually become wholly obsolete. Hence, to-day much depends upon the manner in which we use terms, as this largely expresses our own knowledge of medicine, and is itself often an open confession of our medical weakness. For instance, the termns "organic" and "functional" both have a wide range of application, but the latter is rapidly becoming more and more restricted; hence, in speaking of certain diseases, much depends upon which of these terms we use, as formerly many morbid states were recognized as functional in character, which later investigations proved to be of organic origin.

That a line of demarcation be made, however, between these terms when applied to disease, is at present a recognized necessity, I think all will agree, notwithstanding the fact "that the notion of functional diseases, as distinct from organic, that is of disease due to no structural change in the diseased organ, is fast becoming obsolete." In no department of medicine is the application of the preceding propositions more important, and perhaps more difficult to apply, than the one to which my theme refers. We must ever bear in mind, however, that with increased facilities for investigation, and consequent improved methods of study, our powers of discrimination of diseased conditions has been greatly enlarged, which again has led to a more perfect system of classification, at the same time rendering a complete revolution in nomenclature a necessity. Moreover, increased knowledge of pathology has furnished us the key for more successful methods of treatment, thereby changing entirely the whole aspect of prognosis in these particular cases. Failure to recognize or keep in touch with the true import of all the evidences of modern medical progress is, in my judgment, largely the responsible agent for much of the reproach and censure on the one hand and useless controversy on the other, which unfortunately too often characterizes the medical profession. As a pertinent example of this, where can be found in the voluminous annals of medical literature a more conspicuous series of conflicting theories and erroneous opinions than those advanced by the different writers in explanation of the term spinal concussion? Some go so far as to claim there is no such thing, and that by virtue of its bony and muscular protection, concussion of the spine is an absolute impossibility. Others, again, would seem to include under the term almost every lesion of the spinal column which results from a traumatism. Now, neither of these extreme views is correct, and the time is certainly at hand when we, as a profession, should come to some definite understanding, based upon reliable scientific modern medical progress, as to the true interpretation and significance of the term; and this brings me to the very climax of my theme.

In reviewing the history of its creation, we learn that in 1866 Dr. Erichsen of London was the first to direct the attention of the scientific world to this subject by the publication of six lectures on certain obscure injuries of the nervous system, commonly met with as a result of a shock to the body received in collisions on railways. In 1875 he revised and enlarged his work, claiming that the resulting symptoms were due to concussion of the spine, and considered that the shock of the injury caused molecular changes in the cord, which ultimately led to chronic spinal cerebral meningitis, or that the shock caused anæmia or hyperæmia of the cord.

You will observe by this that fully twenty years have now elapsed since his work appeared, and as it was written at a time when nervous pathology had made but little progress, and long before hysteria and neurasthenia were fully recognized, we can readily understand why Erichsen embraced so many distinct morbid entities under the term spinal concussion. During the past twenty years, however, marvelous developments have taken place in medical science, and this morbid syndrome of Erichsen has been at different periods subjected to severe criticism and critical analysis, which has re-

sulted in the manufacture of other terms which have been offered us as a substitute, such as railway spine, railway brain, cerebro-spinal concussion, traumatic neurosis, traumatic hysteria, traumatic neurasthenia, etc., all of which are intended to account for the varied phenomena resulting from trauma and its effects on the nervous system. Without going into detail, it can be said that the great aim of scientific research has been to differentiate organic from functional conditions, and thus place the whole subject on a more scientific and substantial basis. Hence, we find Hodges, Page, Putnam, Walton, Charcot, Thomsen, Oppenheim, Strumpell and many others, each in his turn, contributing his share in the great work of enlarging and improving our knowledge by adding to it from time to time the newer and more complete results of advanced modern neuropathology.

During the process of evolution many terms have lost their former significance by having their use restricted, while others have gradually appeared and become quite prominent, hence, the whole subject, since Erichsen first called attention to it, has undergone a complete revolution. For instance, the term "spinal concussion" has been deprived of its former wide application, and its use is now, according to Outten (and with him we can all agree), "Strictly limited to those cases in which undoubted symptoms, indicative of derangement of the functions of the spinal cord were directly due to shock communicated to the cord as the result of external violence, and in which there is no obvious, naked-eye lesion in the bones, membranes or cord itself to account for the condition."

Oppenheim prefers to describe the varied nervous affections which result from trauma under the general term "traumatic neuroses," but the tendency of the present time is to differentiate the various traumatic nervous affections rather than to group them under one general heading. There can rarely be much difference of opinion, however, among educated and honestly-inclined physicians and surgeons concerning organic disease when plainly evident traumatisms and lesions present themselves, but it is in the field of functional affections, where purely subjective phenomena rules, and where the changes are not visible, that the chief source of danger lies in making mistakes. But even here, modern science comes to our rescue and greatly assists us in adjusting our former imperfections. While it is true that at times the effects of trauma may be responsible for nearly all the varied forms of organic and functional nervous disease, yet, experience warrants the assertion that the greatest difficulty is met with in functional realms rather than organic. Modern research also teaches us that the most important of these functional affections, due to traumatism, can be limited to three conditions, viz., first, traumatic lumbago; second, traumatic hysteria; third, traumatic neurasthenia. These, then, are the affections which of all others test the skill and knowledge of both the physician and surgeon, and are undoubtedly the responsible agents for more petty disputes and professional misunderstandings on the one hand, and fraud and deception on the other, than all other problems in medical science; indeed, this trio embrace the most vital medical puzzle of the age, and millions of dollars are at their mercy annually. Nor is this strange when we remember that in their study we are challenging the very highest department of medicine by virtue of all parts of the intricate and complex mechanism of the nervous system being represented in their manifestation, hence, their clinical phenomena are as varied as human nature itself, presenting a wide range of purely subjectve phenomena, which at the present time are well nigh unfathomable.

In the past there has been a disposition on the part of surgeons to ignore the purely neurological aspect of many cases, believing that the science of surgery was all-sufficient and competent of itself to master the many problems presented, but the profession has yet a very important lesson to learn when it refuses to yield to neurology that particular right which justly belongs to it, for surgery is not the equivalent of neurology, or vice versa.

What we need to-day, however, is broad-minded, educated physicians and surgeons, who, in the face of unknown problems, have the courage of their convictions and are willing to employ or call to their assistance any of the recognized scientific aids in solving such difficult problems. Those of you who have had much experience in our courts of law, recognize the force of such a truth after listening to the medical testimony. Time will not permit

my enlarging upon either of the conditions referred to, only in a fragmentary way, but there are a few features I desire to emphasize before concluding. Following traumatisms, a variable time elapses, as a rule, before symptoms are made manifest. The initiatory symptoms, however, may come on immediately, or after a few hours, days or weeks, and occasionally it may even take months for them to develop. One of the commonest conditions which often complicate many of these nervous affections is "traumatic lumbago," or strain of the muscles of the back. Its striking feature is pain in the back, which is of moderate severity, and seldom becomes sharp while the patient is at rest, but any attempt at movement increases it; hence, a peculiar attitude is assumed by the patient to avoid any jar, bend or twist of the spine. Another common effect of injury to the nervous system, either by physical force or psychical influence, is the production of a state of nervous weakness or nervous exhaustion, known teacnically as traumatic neurasthenia. The essential elements of this form of neurasthenia are the same as those of other forms. It is the first manifestation, however, of disintegration of the nervous system from any cause, and as Dejerine has shown, it may arise in the healthy organism and form the foundation upon which more profound degeneration may develop, either in the individual or his descendants.

"The weakened nervous system usually shows no definite loss of function, but it is incapable of persistent and prolonged effort." "With more profound disintergrating causes," says Dercum, "or with causes acting on a weaker organism, there may develop an affection which betokens more pronounced disintegration of the nervous system, and which presents more marked symptoms of deficit, with absolute loss of function, instead of impairment, namely, hysteria."

These two affections then are very closely allied and represent a difference of degree, rather than of kind, as the symptoms of one shade imperceptibly into the other, so that often it is difficult to fix a boundary line between them. While they may be distinct, at times, they are more often combined. For many years attempts have been made to refer both affections to alterations in the blood supply of the affected parts, or to vaso-motor disturbances. This vaso-motor theory, however, while not altogether improbable has little positive evidence as yet in its favor.

In an elaborate study of the changes due to functional nerve cell activity, Hodges has found that "in normal fatigue the nuclei decrease in size, assume a jagged, irregular outline and have several other changes." He also asserts that normal fatigue has a close kinship to neurasthenia; hence, in so-called functional affections we may have at first cellular changes, which may give rise to degenerative and other changes, which so far has baffled the best efforts of the investigator to demonstrate.

DIAGNOSIS.

In regard to diagnosis our ability is in proportion to our knowledge of the nervous system and its diseases due to other causes than trauma, and in many cases it is necessary to keep a patient under close observation for a variable length of time before venturing an opinion. In every case it is necessary to eliminate the possibility of organic changes. This can be done by reference to the symptoms, and this again refers to the character of the cause, seat, mode of onset of symptoms, and other facts in connection with the clinical history of the case.

The chief symptoms of traumatic neurasthenia, however, are headache, mental depression, neuralgic pains, especially in the back, insomnia, muscular weakness, vaso-motor disturbances, changes in the reflexes, disturbances of the special senses, particularly of vision, digestive disturbances, vertigo, etc., etc.

In hysteria all these are even more pronounced, and are accompanied with characteristic stigmata, anæsthesia, contracted visual fields, spasm or convulsions, tremor and, indeed, many other features too numerous to mention.

The symptoms of all these morbid states, however, can be conveniently classified under seven heads, viz.:

1. Defects of motion, including all degrees of paralysis.

2. Defects of sensation, including the special senses.

3. Defects of reflex action.

4. Defects of nutrition, including trophic and vaso-motor changes.

5. Defects of secretion, including changes in glandular organs.

6. Defects of psychical and mental apparatus.

7. Defects of the visceral or internal organs.

A knowledge of the complex mechanisms, governing each of these great functions of the nervous system are absolutely essential for all true success in diagnosis.

We must ever bear in mind, however, the possibility of simulation, but with this knowledge well in hand, and being well grounded in the principles of diagnosis, the possibility of such an error is almost out of the question.

TREATMENT.

Every case demands systematic and thorough treatment from the beginning. I am led to believe, both from observation and experience, that the profession has yet valuable lessons to learn as to the value and efficacy of isolation as a therapeutic measure. This, again, implies rest, which is also one of the first indications to be met in the treatment.

We are all too prone to lean on drugs, and think lightly of the consequence of frequent examinations, and the susceptibility of such patients to suggestion, of the absence of certain symptoms, all of which greatly tend to injure the patient's chance of recovery.

Time forbids further enlargement, and no one is more conscious of the imperfections of this paper than I to call your serious attention to a subject which of all others in medicine demands our best united efforts, yet, in its preparation I have consulted the recognized modern authorities and quoted freely from the able articles of Dercum and Outten, besides other equally competent writers, in the hope of eliciting its further interest and study.

Surgical Immunization.

Dr. J. McF. Gaston, Professor of Surgery in the Southern Medical College of Atlanta, in an article with the above title, in Gaillard's Medical Journal, draws these conclusions: (1) That various agencies are always at work in rendering the human organism to a greater or less extent free from the injurious impressions of surgical procedure. (2) That local and constitutional influences operate in conferring immunity, and the environments of individuals, with their habits and customs of the life exert great control over the vital powers. (3) Certain marked changes in the conditions of the nervous system, constituting shock, in course of surgical operations, may be averted by proper measures in advance, and in default of such precautions should be corrected by vigorous means of treatment. (4) That the immunity for normal structures in operative work, which was supposed to be given by germicidal solutions, has proved to be a delusion and a snare, and that they are only admissible in septic contamination of the tissues. (5) That a preliminary examination of all the functions of vital organs should precede surgical operations of every kind, and that efficient correctives should be resorted to for their derangements. The issue of the case depends upon proper means of preparation for an operation. (6) It is not essential for the management of a surgical case that the patient be placed in a hospital, but cleanliness in private quarters, with proper nursing, may secure entirely satisfactory results, by conforming to the ordinary surroundings of the patient. (7) A thorough comprehension of the reciprocal relations of immunity and susceptibility should lead to the adoption of conservative measures in the practice of general surgery, and the use of the most radical and aggressive measures, when indicated by the nature of the case. (8) Those appliances which may promote surgical immunization should be adopted, and those means which lessen susceptibility and predisposition to infection are warranted in all cases of surgical interference.

Late Suture of Divided Tendons; Restoration of Function.

At a recent meeting of the New York Surgical Society Dr. R. H. M. Dawbarn presented a man, twenty-six years of age, who, about ten weeks before he saw him last fall, had sustained an injury of the left hand, resulting in complete division of the flexors of the index and middle fingers at the palmar junction. He had no power of flexion of the phalanges supplied by the long flexor tendons. Dr. Dawbarn made an incision, and had no trouble in finding the distal portion of the tendons, but had to go up nearly to the anterior carpal ligament to find the proximal portions. By strong traction he was able to approximate the two ends to within an inch and three-quarters of each other. Each tendon was united by four distance-sutures of silk-worm gut, which spanned the space of an inch and three-quarters. The hand was kept flexed about five weeks. The result had been excellent, the man had probably as strong a flexor power in those fingers as in the others, and evidently new tendon had formed among the sutures. He could not fully extend the two fingers, but ability to do so would probably come with use. Perhaps it would have been better not to have kept the hand flexed so long, but as he was a laboring man Dr. Dawbarn had chosen the safer side.—Annals of Surgery.

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THE TENTH ANNUAL MEETING.

It will be remembered that the selection of the time and place of the next meeting of the National Association of Railway Surgeons was, by vote of the members present at the St. Louis meeting, left to the Executive Committee. After due consideration of the merits of the several cities suggested it was thought that the relative ease with which a large majority of our members can reach Chicago should carry great weight in the determination of the place of meeting. It has therefore been decided that the tenth annual convention will be held in this city, May 4, 5 and 6, 1897.

While there is every reason to believe that the coming meeting will be successful from every point of view, it must not be forgotten that the measure of success depends directly upon the individual interest and activity of the members and officers of the association. There is much to be done in the five months intervening and every member can do something to contribute to the general interest and practical value of the meeting. Every officer is expected to prepare a paper and to induce his friends to contribute to the scientific work of the sessions. Every member is invited to prepare a paper, report a case, show a new instrument, device or dressing, or suggest a topic which he would like to hear discussed.

There is still ample room for original research concerning numerous problems in traumatic surgery, and we shall hope to have papers descriptive of further studies in the suture of vessels and nerves, the healing of ununited fractures, new methods of wound treatment, etc.

The question of the best methods for determining the practical ability of trainmen to distinguish colored signals is by no means settled, although it has been wonderfully cleared up by the work of members of our association.

We would also suggest the discussion of the following subjects:

Concussion of the Brain vs. Concussion of the Spine.

Railway Injuries of the Various Regions of the Body.

Hospital and Relief Departments.

The Relation of Railway Companies to State Boards of Health.

What are the normal relations of employes to railway companies and what can the National Association and we, as surgeons, do to bring them about?

The Aims and Purposes of the National Association of Railway Surgeons and the Result of its Work.

Let those who will contribute to the program of the next meeting begin at once to prepare. The leisure moments of five months in the lives of most busy surgeons are not too many for the thoughtful preparation and boiling down of such papers as should be presented at the meeting of the National Association of Railway Surgeons. And the boiling down should not be neglected. It is truly an imposition to ask several hundreds of intelligent surgeons to listen for twenty minutes to the reading of a paper all the points of which can be stated with equal clearness in ten or possibly five minutes. Therefore let us, in the preparation of our contributions, be ever thoughtful of those who will listen or

read. Let us thresh no old straw unless we can demonstrate the presence of undiscovered wheat. Let us take no time in giving non-essential details in reporting cases, but at the same time let us not sacrifice smooth and correct English for the sake of using few words.

Without in the least reflecting upon the work of those who have contributed to previous meetings, we are proud to say that the papers read at the last two meetings of the association show a marked improvement both in scientific and literary worth, and it is unquestionably true that the success of a paper depends much upon the clearness and terseness of the language in which it is written. Short sentences, built of good old Anglo-Saxon words, cost the least and go farthest.

Operation During Shock.

Dr. W. L. Estes of Bethlehem, Pa., has an excellent article in the International Journal of Surgery upon the above subject. He concludes his paper thus: "The method and manner of anæsthetizing are also important matters. Both of the commonly used general anæsthetics, ether and chloroform, I have found weakening. To reduce this effect to a minimum, it is important to employ small doses and to continue the inhalation as short a time as practicable. In order to facilitate this I have found morphine, given in a moderate dose, hypodermically, ten minutes before the anæsthesia is begun, to be a very reliable and valuable agent; it materially assists in the anæsthesia and markedly lessens the quantity of the anæsthetic required. The manner of giving the anæsthetic is also important. Forcing and smothering ought to be sedulously avoided. Whatever cone is used, it should be borne in mind that in these weak conditions a liberal admixture of air is necessary. The degree of anæsthesia should never be profound, but simply to the stage of loss of reflex and partial relaxation. The anæsthetic should be entirely discontinued as soon as the suturing of the stump is begun. Usually, with the use of morphine, the state of anæsthesia continues long enough for the operator to comfortably place and tie his sutures."

We are very sorry to know that that brilliant operator and distinguished teacher, Dr. Howard Kelly of Johns Hopkins University, has been ordered into a year's retirement from all work pertaining to his professional life, because of overwork and worry. Dr. Kelly is now in the far West, and we sincerely hope he will regain his former vigor.

Communications.

The following interesting letter has been received by the editor:

Associated Physicians and Surgeons of Santa Clara Valley,

Dr. A. Jayet, . President. Dr. Lincoln Cothran, Secretary.

San Jose. Cal.. Nov. 18, 1896.

Dear Sir:—We ask you to give publicity to this letter and accompanying resolutions, to the end that in all communities afflicted with the pestiferous practice of lodge doctoring, physicians may be encouraged to assert their independence through organization.

Here, in Santa Clara county, Cal., containing 70,000 population, all the physicians of the county, numbering 124, have entered the compact that has ridden us of a slavish evil, and wrought independence and freedom for the practitioners of medicine. Investigation shows that medical compensation for lodge work averages about 15 cents on the dollar.

Even respectable lodge physcians feel a sense of degradation in giving their services for 15 cents on the dollar, and the ever-increasing spread of these alleged charitable institutions is absolutely destructive to the business of other physicians.

The main incentive of the persons who band themselves together in lodges is to get cheap doctoring. They are willing to take but not to give. They belong to protective unions, and the same right should not be denied physicians. Ninety-nine per cent of these people are able to pay reasonable fees to physicians, but will not do so as long as a few doctors in every community for the sake of immediate gain can be induced to stand as driven guys to the lodge politicians. No preacher or lawyer would give his services to these people for 15 cents on the dollar. No grocery store or merchandise firm would contract to supply these lodges with goods at 15 cents on the dollar of actual worth.

The remedy indicated in the subjoined resolutions is simple, and manifestly efficacious, depending upon the personal honor and free will of those concerned. Where one doctor temporarily profits by contract work the business and ethical rights of fifty others are violated. Hence an overwhelming esprit de corps is created among physicians which will sustain a strict observance of the pledge.

LINCOLN COTHRAN, M. D. Secy.

RESOLUTIONS ADOPTED BY THE PHYSICIANS OF SANTA CLARA COUNTY.

Whereas, Rendering professional services at a stipulated fee per capita per annum is derogatory to the dignity of the medical pro-

fession, we, the undersigned physicians and surgeons of Santa Clara county, California, enter into the following agreement:

First. We mutually, jointly and individually, pledge our word of honor not to enter into any contract or agreement, or renew any existing contract or agreement, either written, verbal or implied, to render medical or surgical services to any lodge, society, association or organization.

Second. We will not render medical or surgical services to the members of the above mentioned bodies for less compensation than we charge the general public for similar services.

Third. This agreement shall not be construed to affect existing contracts between physicians and surgeons and the above mentioned bodies.

Fourth. These pledges shall take effect and be in force for a term of three (3) years from and after May 22, 1896.

This agreement shall not apply to hospitals and purely public charitable institutions.

The resolutions have been signed by about 135 physicians of San Jose, Santa Clara, Los Gatos, Palo Alto, Mayfield, Mt. View, Morgan, Hill, Gilroy Saratoga, Agnews, Campbell, Milpitas and College Park.

A standing committee has been appointed whose duty shall be to interview new coming physicians, etc., and, in general, to carry out the purposes of the agreement. Communications may be addressed to the chairman or secretary.

Notes of Societies.

The sixth annual meeting of the New York State Association of Railway Surgeons was one of the most successful in the history of the society. While all the papers were excellent, those by Drs. Roswell Park and Frank H. Caldwell were the papers of the day. At the executive session a resolution was unanimously adopted placing the New York State Association of Railway Surgeons on record as favoring the "Relief and Hospital Department." The following gentlemen were elected to honorary membership: Hon. Chauncey M. Depew, Hon. Cornelius Vanderbilt, Hon. J. M. Toucey; Rev. W. A. Dixon of Brooklyn; Dr. Roswell Park, Buffalo, and Dr. S. C. Graves, Grand Rapids, Mich.

Officers for 1897: President, Dr. J. F. Valentine, Richmond Hill, L. I.; first vice-president, Dr. Geo. Graves, Herkimer, N. Y.; second vice-president, Dr. F. H. Peck, Utica, N. Y.; Dr. C. B. Herrick, Troy, re-elected secretary, and Dr. T. D. Mills of Middletown re-elected treasurer.

Notes, News and Personals.

We are in receipt of a pamphlet descriptive of the Osgood palace car. If it proves to be a practical possibility it would seem to be simpler, cleaner, more easily ventilated and generally more comfortable than those now in use. We shall be glad to see a truly hygienic sleeper and gladly welcome all innovations looking in that direction.

Sir Benjamin Ward Richardson, M. D., F. R. S., etc., Honorary Physician to the Royal Literary Fund, the Newspaper Press Fund, and the National Society of Schoolmasters, died in London November 21.

He was born at Somerby in Leicestershire, England, on the 31st of October, 1828, and was educated at Burrow-on-the-Hill and Glasgow. He was graduated at St. Andrews University in 1854, and gained a number of prizes for papers on special medical subjects. In 1856 he was elected a member and in 1861 a fellow of the Royal College of Physicians, and soon after became a fellow of the Royal Society. In 1873 he was Croonian lecturer, and at different times thereafter was elected a member of various learned and medical societies on the continent of Europe.

In 1866 he discovered the use of ether spray for the local abolition of pain in surgical operations. He also introduced methylene bichloride as a general anæsthetic, and discovered the controlling influence of nitrite of amyl over tetanus and other spasmodic affections.

For some years he edited the Journal of Public Health and the Social Science Review, his contributions relating chiefly to the advancement of medical practice by the experimental method, the study of disease by synthesis, the restoration of life after various forms of apparent death, the maintenance of life in various atmospheres, the effects of electricity on animal life and various methods of killing animals without pain, which finally led to his invention of the lethal chamber now in general use. He also wrote many papers on new medicines and new modes of treatment of disease and on the effects of alcohol on man.

Dr. Richardson has been president of the Medical Society of London and of the St. Andrews Medical Graduates' Association for many years, and in 1868 received a testimonial, of a microscope by Ross and one thousand guineas, from his medical associates in recognition of his many valuable contributions to science and medicine. In 1875 at the Social Science Congress held in Brighton he read a paper in relation to a model city of health, which was the cause of prolonged public discussion. Of late years he has devoted himself largely to the study of the diseases common to modern civilization. His latest work was on "National Health."

Extracts and Abstracts.

Persistent Traumatic Dislocation of Both Hips.

Kofend (Wien. klin. Woch., August 20, 1896), records a case which appears to be unique in literature. The patient was admitted to Gussenbauer's clinic for malignant disease of the right lower jaw, which was operated on with success; the special interest of the case, however, refers to the condition of the lower limbs. Thirteen years before, the man being then 42 years old, was holding up a wagon with both hands; just as he was putting forth his utmost strength to prevent it toppling over he felt a crack in both hips, and was thrown backwards, the cart overturning beside him. He was picked up and carried home, where a bone-setter unsuccessfully endeavored to correct the displacement by pulling and over-extension, with the aid of four men. Cold applications were used, but no bandages; the patient was confined to bed for 14 weeks, then went on crutches for 8 months, and with a crutch and stick for 7 more. Since then he had been able to get about with the aid of a stick, and even to do light field work; he had never received any medical attention. When examined the right thigh was flexed, adducted and rotated in, the foot pointing forward. The region in front of the acetabulum was much flattened, but the head and trochanter could be easily felt bulging behind it. The trochanter was 4 inches above Nélaton's line, and the head lay in a capsule somewhat above and in front of the great sciatic foramen; the acetabulum was not palpable. Complete flexion was possible, the head slipping behind the situation of the acetabulum. Adduction was also perfect, but abduction was impossible, and the limb could not be straightened. The left thigh was bent almost at right angles on the body, the head being beneath the obdurator foramen, so that its movements could readily be felt per rectum. The limb was abducted and rotated out; it could be flexed and adducted, but extension was impossible and rotation limited. There was much creaking, and the acetabulum could not be felt; the dimensions of the pelvis were unaltered. There was also an old fracture of the left tibia, which had united with more than half an inch of shortening. The patient stood mainly on the right foot; the left sole could then only be brought to the ground by tilting the pelvis forward and to that side, so that the hip and knee were flexed, and the limb in the position of genu varum. To compensate this there was lordois and scoliosis, with the convexity to the left of the lumbar and lower dosal vertebræ. His gait was oscillatory, and walking only possible with the aid of a stick held in the right hand. The mechanism of the condition appears to have been fixation of the lower limbs, the left in front, with over-extension of the body, causing the pelvis to slip off both femora. The patient refused an operation for the relief of the deformity. Kofend has collected 8 cases of acute traumatic dislocation of the hips, but has not been able to find an instance in which the condition had become permanent.—British Medical Journal.

Treatment of Rupture of the Kidney.

Keen (Annals of Surgery, August, 1896), in concluding an elaborate paper on the "Treatment of Traumatic Lesions of the Kidney," based on tables of 155 cases, discusses the indications for operative intervention in cases of subcutaneous rupture of this organ. Of 118 cases of this injury that have been published since 1878, 50 were fatal. On excluding 12 cases of associated injuries of other organs, 2 cases in which death occurred very soon after the injury, 1 case in which the patient possessed a single kidney, and an uncertain case, 34 cases are left, in 14 of which the fatal result was due to primary, continuous and secondary hemorrhage combined with shock, while suppuration, including peritonitis, destroyed 16. In 4 cases only was death caused by coma, anuria and nephritis. These figures support the view held by the author, that the dangers of rupture of the kidney are especially hemorrhage and sepsis. A more frequent resort to primary nephrectomy would, it is held, have avoided a number of deaths from both of those causes. The duty of the surgeon, it is pointed out, seems clear. Where the symptoms are threatening, particularly if there be decided evidence of hemorrhage, or probable danger of sepsis, an exploratory operation should be performed without delay. The great mass of recoveries in rupture of the kidney are the slighter cases; the graver cases do not recover unless an operation is done. In any case, therefore, with severe or dangerous symptoms the surgeon should lean toward exploration and in severe laceration toward early nephrectomy. Hæmaturia is regarded as being valuable only as a symptom showing the fact of rupture of the kidney, but not as a symptom by which to decide on operating. Not the visible loss of blood by the bladder, but the easily overlooked, but far more dangerous bleeding into the perinephric tissues, or into the peritoneal cavity, should receive the chief attention. If, then, a tumor form quickly in the lumbar region, an exploratory operation in the loin should be immediately made, and if the kidney be found hopelessly destroyed, or the hemorrhage such as to require ligation of the renal vessels, nephrectomy should be practiced.—British Medical Journal.

Notices and Reviews.

The Physicians' Visiting List, (Lindsay & Blakiston) for 1897. Philadelphia: P. Blakiston Son & Co.

This well-known visiting list comes to us this year with additional improvements, which will make it more acceptable than ever. The cover has been strengthened without increasing its bulk. The number of pages set apart for cash account has been increased besides other minor changes. As heretofore it can be had in five different styles. The regular form for 25 patients per week sells for $1.

An American Text-book of Applied Therapeutics for the Use of Practitioners and Students. Edited by J. C. Wilson, M. D., assisted by A. A. Eshner, M. D. Philadelphia: W. B. Saunders, 1896. One volume, large 8vo, pp. 1,326.

This book contains 78 articles on the therapeutics of medical diseases, written by 42 different authors, and all American except two. The aim seems to have been to create a strictly practical work of a high order devoted almost exclusively to the therapeutics of the different diseases as the writers respectively would teach or apply them, rather than to give a complete history of the therapeutics or any full account of the diseases themselves. The corps of contributors is an excellent one, the articles are in the main well studied and appear to be up to date, and the work is well edited. The book is well printed and a delight to read, although the volume is so large. No such work, the product of so many writers, can be perfect or even; this one is not. Some have written with refreshing fullness and detail, a few with regrettable brevity. Doubtless some things of importance have been omitted. The articles overlap in places, and perhaps some matters of minor significance are not treated. But the work contains more accurate, practical wisdom of the hour on the subject than any single author could hope to have put together and is altogether a book of superior excellence. A few of the writers may have forgotten that the basis of pathology has changed of late, but in the main the treatments recommended are based on the modern doctrines of the causation and nature of disease, and this is one of the chief charms and greatest merits of the work. We have been moving forward in the study of etiology and pathology and lagging behind in therapeutics. To-day no man can write a true account of human disease except in full view of all the meaning and possibilities of infection and the intoxications. This may not be the correct basis, but it is the best we have so far attained, and our treatment of the sick ought to be in accordance with it. If future discovery shall give us a better basis we ought to be frank to change our therapeutic methods, and one of the best things a truly modern doctor can do for himself and his patients is, every half decade of his career, to overhaul his knowledge of therapeutics and his habits of procedure and bring them up to date if he can. Such works as the one under consideration are invaluable aids to this process and they are greatly to be commended.

N. B.

BOOKS AND PAMPHLETS RECEIVED.

"A New Dressing for Fracture of the Clavicle," by M. L. Harris, M. D. Reprinted from the Chicago Medical Recorder, September, 1896.

"Chorea," by Henry Hatch, M. D. Reprinted from The Journal of the American Medical Association, October 17, 1896.

"The Diagnosis of Tuberculosis from the Morphology of the Blood—An Original Research, with Report of Cases," by A. M. Holmes, A. M., M. D. Reprint from the Medical Record, September 5, 1896.

"Gonorrhea in the Puerperium," by Albert H. Burr, M. D. Reprinted from The Journal of the American Medical Association, August 1, 1896.

"Infantile Scorbutus," by Albert H. Burr, Ph. B., M. D. Reprinted from The Journal of the American Medical Association, November 7, 1896.

"Optic Neuritis," by William H. Wilder, M. D. Reprinted from International Clinics, Vol. II, Sixth Series.

"Chloroform in Labor," by Frank B. Earle, M. D. Reprinted from the Chicago Clinical Review, April, 1896.

"The Use of Cicatricial Skin Flaps in the Operation for Ectropion of the Upper Lid," by F. C. Hotz, M. D. Reprinted from The Journal of the American Medical Association, September 19, 1896.

"On the Importance of Physical Signs Other than Murmur in the Diagnosis of Valvular Diseases of the Heart," by James B. Herrick, M. D. Reprinted from Medicine, October, 1896.

"Report of a Case of Typhoid Fever Complicated by Extrauterine Pregnancy," by James B. Herrick, M. D. Reprinted from the Medical News, October 17, 1896.

"Thyreoid Therapy," by James B. Herrick, M. D. Reprinted from Medicine, August, 1896.

"Hypnotic Suggestion as a Cure for Asthma," by Thos. Bassett Keyes, M. D. Reprinted from the Medical World, July, 1896.

"The Treatment of Dipsomania, Morphiamania and Onanism by Hypnotism," by Thos. B. Keyes, M. D. Reprinted from The Journal of Materia Medica, April, 1896.

"How to Cure Rheumatism," by Elmer Lee, A. M., M. D., Ph. B. Reprinted from The Journal of the American Medical Association, July 25, 1896.

"The History of the Discovery of Anæsthesia," by Burnside Foster, M. D. Reprinted from the Northwestern Lancet, 1896.

"A Series of Articles on Speech Defects as Localizing Symptoms, from a Study of Six Cases of Aphasia," by J. T. Eskridge, M. D. From the Medical News, June 6 to September 19, 1896.

"Electro-Diagnosis and Electro-Therapeutics Simplified," by Hugh T. Patrick, M. D. Reprinted from Medicine, November, 1896.

Miscellany.

The Marine Hospital Service.

There will be held in Washington, D. C., on February 3, 1897, a competitive examination of candidates for appointment to the position of assistant surgeon in the United States Marine Hospital Service. Candidates are required to be not less than twenty-one years of age, and no appointment is made of any candidate over thirty years of age. They must be graduates of a reputable medical college and furnish testimonials as to character.

Successful candidates, having made the required grade, are appointed in order of merit as vacancies arise during the succeeding year. A successful candidate, when recommended for appointment, is commissioned by the President of the United States as an assistant surgeon. After four years of service and a second examination he is entitled to promotion to the grade of passed assistant surgeon, and to the rank of surgeon, and after a third examination, according to priority, on the occurrence of vacancies in that grade.

The salary of an assistant surgeon is $1,600 per annum, together with furnished quarters, light and fuel; that of a passed assistant surgeon, $1,800 per annum, and that of a surgeon, $2,500 per annum. In addition to these salaries, after five years' service, an additional compensation of ten per cent of the annual salary for each five years of service is allowed medical officers above the rank of assistant surgeon, the maximum rate, however, not to exceed forty per cent.

When an officer is on duty at a station where there are no quarters furnished by the government, commutation of quarters is allowed at the rate of $30 a month for an assistant surgeon, $40 for a passed assistant surgeon, and $50 for a surgeon. The successful candidates, after receiving appointments, are usually ordered to one of the larger stations for training in their duties.

Full information may be obtained by addressing the Surgeon-General of the Marine Hospital Service, Washington, D. C.

Irritable Stump.

At a recent meeting of the New York State Medical Society Dr. Joseph D. Bryant of New York County, read a paper on this subject. He stated that, according to the military statistics of the late war, of 287 amputations of the leg examined five months after the operation, in twelve per cent the stumps were still unhealed, and in fourteen per cent they were imperfect. Of 132 amputations of the thigh, according to the same authority, there were 21 unhealed and 21 with imperfect stumps at the end of the same period. So far as he had been able to ascertain from makers of artificial limbs and from a study of the subject, the three main requisites in securing a good and useful stump were: (1) Such a length of flap that undue traction would not be made on the stump; (2) a movable cicatrix, and (3) a periosteal covering for the divided ends of the bone. The first was the most important, because, if it was attended to, the evils of the others were reduced to a minimum. Dr. Bryant then described the method which he had found satisfactory in dealing with an irritable stump in the lower third of the leg. It was, briefly, as follows: A circular flap was made in the lower third of the leg, of a length a little greater than one-fourth the circumference of the limb at the point of division of the bone. This flap was reflected upward for about half an inch, and then a transverse incision was made across the subcutaneous surface of the tibia, at the line of reflection of the flap, down through the periosteum. The periosteum was also divided by an incision in the log axis of the tibia. The periosteum was then pushed up instead of being dissected up with the flap in front. In this way a portion of flap corresponding to the subcutaneous portion of the tibia was lined with periosteum, and this fell over the end of the bone when the flaps were coaptated. The tibia was divided transversely on a line with the periosteal reflection, and the fibula a quarter of an inch higher up. The flaps were coaptated obliquely on a line with the subcutaneous surface of the tibia. It was important, Dr. Bryant said, that the periosteal flap should remain connected with the superimposed tissue, otherwise it would slough away or become absorbed.

Dr. Marcy said that one very common cause of irritable stump—the presence of a neuroma—could be largely avoided by covering over the nerve with periosteum. Where the various layers of tissue were closed by separate rows of sutures, it would usually be found that the stumps were more serviceable.

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SOME OF THE INEFFICIENCIES OF THE METHODS THAT ARE ORDINARILY EMPLOYED BY RAILWAY SURGEONS FOR THE DETECTION OF SUBNORMAL COLOR-PERCEPTION (COLOR BLINDNESS[1]).

BY CHARLES A. OLIVER, A. M., M. D.,

Attending Surgeon to the Wills Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital; Ophthalmic Surgeon to the Baltimore & Ohio Railway Company, etc.

As illustrative of the first inefficiency, as long ago as 1855, George Wilson of Scotland, one of the first medical men and scientists to practically study the relationship existing between imperfect color-vision and railway travel, and to actually put into use the best methods of detecting the imperfection, found as the result of numerous examples and experiments, that not only may color be recognized correctly at short distances and not distinguished at longer ones, where such colors are plainly discernible to the normal-sighted, but that the sensitiveness to the colors while being gazed at, becomes more quickly lost as they are removed from the eye of the "color-blind" than when they are removed from the unimpaired visual organ.

To these findings he gave the somewhat graphic yet imperfect term "chromic myopia" or short-sightedness to color, which he said that as far as he was aware, "has not hitherto been generally recognized."

Established as one of the necessities to his proposed plans of testing railway employes for imperfect color-perception, it has in most instances been set aside by the sweeping yet ridiculous assertion of inconvenience, impracticality, chance of imperfection of examina-

[1] Paper read before the June, 1896, meeting of the Association of the Baltimore & Ohio Railway Surgeons.

tion, untrustworthiness, etc.; assertions that will apply much more forcibly to the methods that are now so universally used—loose wool-selection at one or two meters' distance.

Here, instead of the test being made at what the present writer has designated as the distances that are requisite for future safety, they are performed at so close a range to the candidate that the results never can be depended upon as of any practical value for the safety of life and property when such eyes are engaged in actual service upon rapidly moving trains that follow one another in quick succession. That any previous test should be efficient when the visual organs are placed under such circumstance it is requisite that it should be made when they are situated under similar conditions and while the eyes are placed in the same positions as they would be when it becomes necessary that they should be the sole means of exercising prompt action in the avoidance of a threatening accident or imminent calamity.

One or two meters' distance away from the point which determines the presence or the absence of a catastrophe is, as all practical railway men know, entirely too close for the avoidance of unfortunate results during subsequent impending danger. A laden engine moving with the rapidity of 20 to 25 meters each second, would have been propelled into destruction long before any engineer could check its speed. In other words, the recognition of the signal must be determined at a safe point; it must be made at a sufficient distance to properly control the moving mass. To do this the visual organ which has almost sole charge of this function must necessarily be able to differentiate color when it is placed at a safe distance; it must have been previously tested to do it at that distance; and the testing must have been done when the eyes were placed under the same conditions and under similar circumstances as when they are employed during actual work.

In the acquired color defects produced by the introduction of toxic agents into the system, such as tobacco, and which appear in the part of the field of vision that is used when any object is gazed at, the testing with large massings of color placed at short distances from the eye as in the ordinary wool-tests, becomes useless; here another worse than inefficiency comes into play. As the central blind or dimmed area in the field of vision does not always include the whole surface of any of the skeins of wool, the candidates may be passed, thus allowing this most dangerous class of subjects to be placed in service where the subject cannot differentiate the color of signal boards and lights or even distinguish them, as in one instance seen by the writer, where he found a case of tobacco amblyopia actually at work upon an immense railway-system after having successfully passed the near-wool test.

At about the same time that Wilson applied his findings to color-testing among railway employes, Lees of the Edinburgh, Perth and Dundee Railway pointed out another inefficiency. He stated that it was well known that the different degrees of vividity of equal areas of red and white illumination (in fact, of any color) produced alteration in impressions as regarding their relative distances from one another.[1] Based upon this, he asserted that "a red light seen from a distance seems much further than a colorless light side by side with it, the eye assigning a less proximity to the less luminous lamp, in conformity with its experience of the different apparent brightness of lights of the same color and luminosity placed at different distances from it."[2]

To remedy this in railway color-testing, both the areas of reflected and transmitted color-material employed should be graded in size and intensity of tone into proportionate amounts, thus making every color used in the tests of the same distance-value.[3] That they are not is too well known; that they should be is an absolute certainty.

A third inefficiency in color-testing of this class of subjects is where there is the want of consideration of the situation in which the testing is done.

The examination should be conducted in

[1] This, which is just as true, though somewhat less noticeable by diffuse daylight, where the colors as a rule appear darker, is markedly seen when the color hues are strengthened in brightness by being projected against the dark background of night.

[2] These facts are well understood by painters and colorists, who make use of them in their disposition of strongly and weakly reflecting color-areas upon flat surfaces in order to give effects of perspective and so-called warm and cold tone-contrasts. The application of the rule of simultaneous contrasts to railway work may often be aggravated or even absolutely perverted when new color impressions produced by subjective after-color, as for example as commented upon in the case of a serious collision which occurred many years ago upon one of the Irish railways, in which it is stated that an engineer or stoker might, after gazing into the interior of a furnace box for a few moments' time, see all the color-signals of a greenish tinge.

[3] This rule is equally true for the gradation of the ordinary color-signals used, not only in railway, but more particularly in marine service where the danger is very great, especially in well filled and fog-laden harbors.

places where the visual organs are to be employed and under the same circumstances in which they will be placed during actual work. The test should be a practical one. By this means the test-color selection in reality becomes the same as that which later is practically and almost constantly given to the visual organ. The loose-color selection must be removed to a safe distance from the candidate and the test must be placed in the actual line of the railway trackage.

Anyone knowing empirically, if not scientifically, that colors, especially red, green and blue, which are so much used in railway signaling, undergo such diverse modification of hue when seen through varying degrees of solar luminosity, can, if he be conversant with the ordinary methods of color-testing upon many of the railways, in a moment realize another source of inefficiency in the tests as usually applied.

Again, the condition of the intervening atmosphere and the dominant color of the reflecting surface near which the test is made (as for instance the green of a hillside, the gray and the white of a mountain top, the blue of an ocean surface), both play important rôles in the question as to the value of the test; but as a rule they are never considered.

The character of the illuminant itself[1] is of the greatest importance, and yet how seldom, until recently, in a measure in England, has it been considered. For instance, when diffuse daylight in this latitude and climate is bluish; the zirconia or metallic oxide mantel of the Welsbach light, made incandescent by the admixture of air and ordinary illuminating gas, as in the commonly employed Bunsen burner, generally gives a greenish or nearly white tint; oils, illuminating gas and the varying shapes of carbon loops made incandescent by electrical current all emit varying degrees of yellow rays; and lastly, when arcs of electricity, especially when the current is extremely rapid and strong, may even appear purplish; is it any wonder that under such varying conditions test-colors change, not only in regard to the certain peculiarities which give them their special tones of hue, but actually, as previously shown by natural illumination, to more or less cvhange in hue itself?[2]

Consequently, when color is to be seen practically and daily under such conditions in railway employment by those who must depend almost wholly upon the perception of color alone for the safety of life and property, the testing should be done under similar conditions before any candidate is allowed to assume the risks that are incumbent upon such positions.

An inefficiency which many have tried to overcome is the totally different values that are empirically placed upon the hue of the test-colors themselves. In England, Abney has done much toward this question by determining the value of the reds and greens as ordinarily used under gas and electric light exposures upon some of the most important railways.

This inefficiency, however, can, and should be, practically set aside by assuming pigment-hues that are equivalent to the midway bands in the corresponding portions of the solar spectrum. These selections, which may be determined mathematically and analytically by an International Commission, and then reproduced in pigment by a consensus of examination by a sectional (or even a national) sub-committee of competent observers possessing normal color vision,[1] can then be used for signal-boards, signal-lights and test-colors in the special locality given. The tests to be used by artificial light or modified daylight in different situations may, if thought wise, be constructed under the same general average stimuli that are to be employed in the future to illuminate the signal-colors.

A marked inefficiency in all color-testing amongst railway employes is the permittance of candidates with slight though recognizable imperfect color-vision to pass the examina-

[1] The examples: a light red becoming purplish in diminished illumination and a vivid scarlet in increased illumination, and an impure green actually partaking of its secondary admixture upon increasing the illumination and becoming greener upon lowering the illumination, are amongst the striking illustrations that concern us here.

[1] We are all aware that color is markedly modified by the tint of the illuminant or the incandescent material. This fact alone gives many cases of slight imperfection in color-sense the ability to partially correct their mistakes when color is examined under an illumination which is preponderant in yellow and orange rays.

[2] For example, a definite area of red hue at a fixed point will with varying tints of some form of dominating colored light (especially if the substance reflecting or transmitting the red be made interchangeable in construction) affect certain peculiarities in coloration before the last phase of the color itself is annihilated; so with every other color-differentiation.

[1] Of course, a series of International Appeal pigment-tests could be obtained and used as checks by the International Commission, but as the sectional tests would most certainly represent the preponderant ratios of color in the locality in which the tests are to be employed and the signals to be used, it would seem to the writer that the plan described above is, for the present, the more practical of the two.

tion, and afterward to occupy positions where a part of their daily duty consists in differentiation of color.

There should not be any degree of standard in regard to the capacity and responsibility where color differentiation forms itself as a part of the routine duty of the employes. Such positions are so few in number when contrasted with the great supply of available applicants, and the responsibility is so grave, that no exception should be made. By this means, and by no other, will the chance of danger of admission of imperfect color-seeing organs into actual service be further reduced to a minimum.[1]

Again, in this connection, it must be remembered that the employe in reality is the one who is the most protected. He necessarily is the one that in an accident runs the greatest risk of forfeiting his life. Such candidate should be rejected without a particle of sentiment. They should not be accepted if they are practically unfit, even to a ninor degree, for the work required of them in color-perception.[2]

The lack of systematic and periodic re-examination of those who have been previously accepted is another great evil. This inefficiency in color-testing amongst railway employes is truly reprehensible. It is not expecting too much that the tests employed in different routine and by varying methods should be repeated yearly and at different seasons upon the entire personnel of the railway company that is engaged in positions where recognition of color in any important way, affecting life and property is at all necessary. After every case of severe injury or attack of illness that might in any way be likely to produce visual disturbance, the examination should be made. Amongst those who known by strict and yet silent surveillance to use any toxic agents, such as tobacco and alcohol, the tests should be both painstakingly and frequently tried.

The increased responsibility required by civil service, where older subjects, who are more prone to exhibit acquired color-defects than younger ones, are necessarily given positions that more greatly necessitate the employment of normal color organs than even before in the past, has not been considered as fully as it should be. In every such case there is sufficient reason to require careful periodic repetitions of some of the most important of the means that are employed to re-study color-conditions.

That these general inefficiencies so often seen in color-testing—a few amongst many of both greater and lesser importance—are still permitted, is beyond comprehension. At first sight most of them appearing of minor importance to the railway surgeon. the general practitioner of medicine, the railway official and the layman, yet without citing any of the well-known catastrophes both by land and sea that have without question been proven to have been dependent upon imperfect color-vision in unexamined and faultily examined employes, it must be conceded by all that the subject, when more fully understood and better realized, becomes of vital interest. Moreover, when it is considered that between four and five in every one hundred healthy men possess degrees of congenital subnormal color-perception that practically unfit them for employment in this peculiar direction (dangerous work that is mainly dependent upon color-vision), it seems to the writer's mind, at least, that there should not be an iota of quibble as to the advisabilty of the most careful and the most conscientious selection of only those candidates who possess as one of the most important parts of their physical equipment as perfect color-vision in each eye as can be gotten.

Green and red colors, in spite of all attempts of abandonment or change, must be used for railway signaling (and hence testing), and as these colors are the ones that are unrecognized by the great majority of the congenital cases of lowered color-perception, and are those that disappear the earliest in incipient disease, the danger must constantly remain with us. Increased illumination of signals by electricity will not remove the cause. All that can be done is to have an uniform coloration of all the colors used both in regard to hue and tone, subject to the average varying conditions, situations and circumstances in which

[1] Just as in parental countries, unremitting quarantine inspection, compulsory vaccination, etc., are the only ways to guard against danger. So here the barrier should be placed at the entrance and no one who does not possess a normal color-sense should be admitted.

[2] The fact that the differential diagnosis between a fixed congenital malformation and a commencing acquired color-defect in many cases is, at times, extremely difficult to determine even by an ophthalmic expert with his instruments of precision and his many methods of careful clinical research, renders this more pertinent.

the signals are to be used throughout the entire railway system of any certain geographical section; and to perform the tests under the same conditions as the candidate is to be placed when it becomes necessary for him to determine quickly and promptly the colors of the signals in actual use. The signal-colors fixed and certain, nothing further remains necessary than to make the test-colors as nearly as possible identical with them.

Knowing from experience that loose color-selection at a distance is the only way to accomplish the purpose properly, simply and quickly, by those who are adequately trained in its performance, some such plan as shown and described by the writer in a paper read before the 1888 meeting of the American Ophthalmological Society can be used as the general method. By this means the numerous other and more complex plans can be reserved for a Chief Ophthalmic Expert of the road and his Assistant. To them all doubtful cases, and those where medico-legal questions may arise, may be given, so that less error in reasoning and fewer flaws in judgment can be established in any given case.

In conclusion, it must be understood that the present paper is merely a fragmentary and meagerly written effort to supplement what the writer has time and again personally endeavored to accomplish in other ways: that is, to protect the traveling public and their property from one of the greatest of special dangers known in railway service—subnormal color-perception (so-called "color-blindness").[1]

FOUR CASES OF FRACTURE OF THE FEMUR.*

By Dr. E. J. Miller, Marion Junction, S. D.

It was after considerable hesitation that I consented to present my first paper before such a learned and experienced body of surgeons. Medical men, and particularly surgeons, do not care for long-drawn-out introductions, nor do they attach as much importance to minutely detailed histories of cases as they formerly did. If I have here committed that error I beg your pardon, and will endeavor to do better next time. It matters but little to us whether a man fell from a church steeple, a box car, or a door step, except for the mental effect it may have on the patient; what we want to know is, how and where our patient is injured, so that we may come to an immediate decision as to the injury we have to deal with.

After knowing the nature of an injury, the next question is, what should be done that will bring about the best results for the patient with as little pain and inconvenience as possible, and how should it be done?

I am on the "great prairies," in a small town ten miles from any other physician, hundreds of miles from a medical center and surgical instrument stores. I have no county medical society, no discussion about this or that surgeon's operation, this or that surgeon's system of setting fractured limbs. There is little to stimulate and encourage one on, and to keep one posted, except one's own personal ambition and energy.

Being surrounded by such conditions, what more can we do? We should attend every meeting possible. No surgeon can help gaining some valuable information from listening to the discussion of papers read, or cases and personal experience related. We should also attend clinics and take post-graduate courses as often as our means will permit—which is oftener than we will allow ourselves to believe.

We who are surgeons for railway companies should familiarize ourselves with the mechanism of engines and with the construction of freight and passenger cars for reasons that must be potent to all.

We should also be familiar with the principles of how this or that operation is performed by our leading masters.

We should be self-reliant, not egotistical, have some mechanical skill, and be not afraid to use a little originality for fear of criticism, where such can be done without being detrimental to our patient or employer.

Personally, I take as much pride in my shop, with its bench and tools, as I do in the use of my surgical instruments. In using tools in a shop we cannot help becoming more proficient in using our surgical instruments on a fellow-man. It is a sorrowful sight to see a surgeon

[1] All that has been written here is equally as true for the so-called traction trolleys which run at such high rates of speed, especially in suburban districts, and so rapidly and frequently change passengers. In this class of employes, as a rule, applicants are selected for duty as both motormen and conductors, with an utter disregard not only as to their color-vision but as to their other visual functions.

* Read at the fourth annual meeting of the C. M. & St P. Railway Surgeons' Association at Chicago. Nov. 12 and 13, 1896.

sawing off a femur, or any other bone, begin with the point of the saw instead of the heel, or hitting his fingers or hand instead of the head of the chisel, or tying an old woman's knot instead of a square or surgeon's knot!

In presenting the following four cases of fracture to the femur I have selected cases which give a range of ages and that happened under somewhat different circumstances.

Case No. I.—Jan. 11, 1894, I was called to see J. B., a German, aged 18 years, eight miles in the country. The message was: "Henry has fell and broke his leg; come quick." Not knowing just what I had to deal with, I put a few extra bandages in my grip and was off, arriving there about two hours and a half after the accident. I learned that while the patient was coming from the barn, in scuffling with the boys he had slipped on the ice, and at the same time one of his companions had fallen on his leg. They heard it crack and he was unable to get up or stand. On examination I found that he suffered a simple oblique fracture in the upper third of the right femur, the upper end of the fracture being about two inches below the lesser trochanter, the lower about four and one-half inches below the greater trochanter. As the treatment was the same in all four cases, I will endeavor to describe it here. Bear in mind it is in the country, where it is not, "Get what you want," but "Take what you can get." Yet, if I were where I could get what I wanted it would be the same, simply finished a little better.

From an old piece of siding I made an outer splint long enough to extend from the axilla to three inches below the foot. Another splint was made of an old lath to extend from the perineum to three inches below the foot, well padded in the crotch. About eight inches from the lower end of the splints I tied a piece of bandage ten or twelve inches long with a "clove hitch," the ends being on the outside. I then tied two bandages of the same length on the opposite sides of the ankle in the same way. With the patient on a bed, floor or lounge, having my splints, bandages and cotton ready, I reduce the fracture, having whoever chances to be present, hold the leg and pull on the foot, keeping it turned out at about an angle of 40 degrees. I then pad the leg, and place the inner splint in position, pushing it well up in the perineum; then I place the outer one into position, pushing it well up into the axilla. I then make all fast with separate bandages around the splints, one above the knee, one around the chest, one about the abdomen and pelvis, and one below the knee, well down. I then bring down the inner bandage that has been made fast above the ankle, passing it over the end of the inside splint; I do the same with the outside splint and ankle bandage, making them fast. I then put a block of wood three and one-half to five inches long between the two splints to keep them from pressing on the inner and outer malleoli. I then put on eight or ten more separate bandages at different parts of the leg, tying all in a square bow knot.

With such a dressing the leg is easily examined at all times. The entire operation, including the making of the splints, does not take more than thirty minutes.

The patient rests comfortably—at least my patients have—and I have never found it necessary to give an anæsthetic in reducing a fracture of the femur except in one case.

In from eight to fourteen days I take off the splints and put on a plaster of Paris bandage, the whole length of the leg well up on the outside.

In some cases I put thin cottonwood splints, such as are used in making egg cases, soaked in hot water so as to form to the leg, between the cotton and plaster of Paris. I then give the patient a pair of crutches and have him up and walking around from that time on; allowing him to eat and drink anything he wants, excepting liquor.

The case already alluded to made a good recovery. In eight weeks I removed the plaster of Paris bandage and found no perceptible shortening. I saw him again on the 20th of October, 1896; there was no shortening then.

Case No. II.—Mrs. S., German, aged 33, March 13, 1893, slipped and fell from her doorstep to the ground—about 22 inches. I arrived about four hours after the accident and found a simple transverse fracture in the upper third of the left femur, three inches below the great trochanter. With an old saw, hatchet and a pocket knife I made the splints, reduced the fracture and put the splints on as in Case 1. In fourteen days I put on a plaster

of Paris bandage; a few days later she got up, began walking around on crutches, and in ten weeks I removed the bandage. She used the crutch for three weeks longer, when she came in to see me; there was not then and is not now over one-quarter of an inch shortening.

Case No. III.—D. R., American, aged 54. August 15, 1896, while crossing the railroad track was thrown from a load of oats; several sacks fell on him. About one-half hour after the accident the sectionmen heard him calling help; they put him on a hand-car and brought him to the station, one-half mile south. I chanced to be passing through the town, being out chicken hunting, and was hailed. This was four and one-half hours after the accident. I examined the man and found a simple oblique fracture of the right femur, in the upper third; he was in great pain, though pretty full of whisky, which had been given him by kind friends. Having nothing with me but my gun—which was, of course, of no use in this case—I went to the track where they were building an elevator. There the carpenters kindly loaned me a saw and a hammer and gave me some nails and boards. I soon had the splints made, tore up a sheet for bandages, reduced the fracture, and applied the splints as I have described. I then loaded the patient into a spring wagon and sent him home, three and one-half miles north. I saw him again the next morning and every day thereafter for fourteen days, as I had to draw the urine.

On the 29th, fourteen days after the injury, I put on a plaster of Paris bandage and gave him crutches. On the 30th he was up, and more or less every day thereafter until the 6th of September; he was up all the time by the 15th, out about the yard. On the 17th of October I removed the bandage. I saw him November 1 and he has a shortening of three-eighths of an inch.

Case No. IV.—J. B., a German farmer, aged 62. July 7, 1892, while returning from Freeman on a load of hay—also having quite a load of "spirits"—was thrown off the load just in the edge of Marion. He was brought to my office at 9 p. m., and laid on a table. On examination I found a simple oblique fracture in the upper third of the right femur. The upper anterior end of the fracture being three inches below the great trochanter, the posterior one six and one-half inches.

I soon had the splints made in my shop. After reducing the fracture and padding the leg with cotton, I applied an extra lath for an anterior splint, extending from the groin to within four inches of the patella, and a posterior splint five inches above the center of the popliteal space. Then I put the other splints on and bandaged as I have described. He was then removed to the hotel.

Three days later he was taken home, nine miles east. I saw him three days later, and again in three days. On the 28th, three weeks after the accident, I put on a plaster of Paris bandage, with light anterior and posterior splints. He was up and around with crutches in a few days. September 25 I removed the bandage. I saw him last August. I was unable to find a shortening of more than one-half inch in any position of measurement.

If I have said or presented anything worthy of your consideration, I beg your criticism and hope my seniors and more fortunate city brethren will feel justified in extending the hand of professional fellowship and give words of encouragement to the country doctor.

DISCUSSION OF DR. E. J. MILLER'S PAPER.

Dr. Binnie: It is a dangerous thing to say very much about the question of fractures. I have been treating fractures in a manner similar to that described by the doctor for a good while, with the exception of the hitching below. I have used much wider splints than the doctor in the treatment of these fractures. I thought by dressing my fractures in that way I would have no accidents, but occasionally we do have them in spite of any form of splint that we may use. I have used pump-log, and recently I have been purchasing elm splints, put up and sold in Madison. I can get them to fit nicely. But with the best of splints the physician will not save himself from encountering difficulties at times, whether due to the form of splint or the peculiar form of the fracture.

Dr. Johnson: In the treatment of fractures of the thigh the essential point is extension. I think splints have comparatively little to do with the results obtained. In making extension I should use for this purpose adhesive plaster. Within the past two years I was

hastily called to an accident from the caving in of a bluff, during which one man was killed and another had his thigh broken above the knee and leg broken below the knee. These men were taken to a camp. There was the dead man on one side of me, and the living, but badly injured, man on the other in a semi-conscious condition. (Here Dr. Johnson demonstrated the manner in which he improvised a splint and applied extension in this case.) After we got the man fixed up we put him aboard a steamboat and he was taken to his home, a distance of 20 miles. I afterward heard from the doctor there, saying that the splint I applied was not taken off until it was left off permanently.

With reference to fractures of the thigh in children, I have had three such cases within a comparatively short time. I was somewhat at a loss to know how to manage this fracture, but I applied a plaster cast to the entire limb and lower half of the body on that side, and I would mention that the mode of making extension was to slip the plaster cast on the limb, then when I had it about half applied I took a piece of light hoop iron and put it down on both sides of the leg, making it three inches below the foot, reaching afterward the other side and across and fastened by means of a rubber band. Under this method of treatment these three cases did so nicely that I never want to use anything else. It is true, I may not have such gratifying success again.

Dr. Hemenway: I wish to make one protest against the implication that was given by Dr. Miller, and it is one that is very common and, I think, harmful, namely, that the city physician is to be regarded as generally more proficient than the country doctor. I do not believe it. I say what I say from a full knowledge on the two sides. I have seen the country doctor, and mind you, I believe in the science of medicine rather than empirical practice—I believe a man should be thoroughly posted and know all of the latest improvements so far as possible. But it has been my observation that the country doctor as a rule works things out for himself. He considers them and applies them; whereas the city physician, as a rule, as soon as he comes in contact with a difficult case, turns it over to somebody else. The change may be a benefit for the patient, but generally I do not believe it. Except in the case of a few who are favored with hospital positions and facilities, the average city physician is not as ingenious as the country doctor, and the idea so prevalent that the city physician is to be regarded as much superior has a detrimental effect upon the younger members in country practice. They have a feeling of despair at the outset, which is oftentimes harmful.

Dr. Mitchell: My plan is similar to that of Dr. Johnson's. When I want extension I use a pair of spring scales instead of rubber extension, so that I can weight my extension each day and know how much I use.

Dr. Lincoln: I would ask whether the use of wide adhesive strips in treating fractures of the thigh is considered good surgery at present.

Dr. Cool: I desire to make an inquiry in reference to this transverse fracture. The doctor employed his improvised splint. Was there any necessity for that? Would not coaptation splints applied around the thigh keep the fragments in apposition? Was there any necessity for extension or counterextension? Another thing. Is the splint the doctor has exhibited any better than the old splints? I do not criticize the doctor's splint at all, but I want to know if, whenever I have a transverse fracture of the bone of either the leg or the thigh and treat it with coaptation splints, it is not sufficient.

A Member: How often do we see a transverse fracture?

Dr. Cool: I do not know. Here is one, you can look at that.

Dr. Johnson: Why not apply a plaster bandage at once, or within 24 hours. Would not that be considered good treatment?

Dr. Thompson: I think not. I do not think it is proper to cover a fracture of the femur until partial repair has taken place at least, and I do not think the criticism the doctor made on this point is quite fair. The doctor told us he did not have any splints, that he made his own. There are many of us who live in the country that make our own splints, and I think the doctor has improvised a very good dressing for fracture of the femur. Again, his dressing was proper if he had a transverse fracture. I do not think, however, we ever get a decided transverse fracture in which it is not necessary to apply extension to hold the bone

in position. I think the splint, with the exception of the hitch around the ankle, is a good one. I make my extension with plaster and a rubber band, but I do not think it is good practice to cover up a fracture of the femur until we get partial repair. We want to see it from time to time.

Dr. Townsend: The question of plaster of Paris splints has come up. The splint I use will perfectly fit every fracture. It prevents the fragments from slipping, and any man can use it. I buy in any store a piece of heavy flannel, as heavy as can be obtained—what we call Mackinaw flannel. If a femur is broken I use the well limb for a pattern and make a splint which reaches from the ankle up into the groin. I have a splint to fit about the knee, the calf of the leg and thigh. I cut it out of this heavy Mackinaw flannel. I have a splint so that it will not close within one-half or three-quarters of an inch around the limb. I take the flannel and put it in plaster of Paris, about the consistency of cream. After I have done that I take some sheeted wadding and line the splint and apply it to the limb, placing around it a roller bandage. If the limb is swollen, I can spring it apart, and after the swelling has gone out of the limb I can bring it together; I can put a roller bandage on it and if I have a fracture of the femur, tibia, humerus or of the ulna, I can look at the limb at any time. The splint is elastic; the plaster of Paris is incorporated in the flannel, and you can make a splint large or small. Such a splint as I have described works admirably. I have used it in fracture of the femur, in Colles' fracture, Pott's fracture, and invariably have good results from its use.

Dr. Bell: I would like to inquire of the essayist whether he has met with any difficulty from the tilting of the upper fragments in either of the cases reported?

Dr. Miller: No. In case No. 4 I applied an antero-posterior splint, as well as two lateral splints, and had no trouble whatever.

Dr. Binnie: In regard to plaster of Paris, I have seen some bad results following its use. I recall one case where a man received a fracture of the femur one afternoon, which was put up in a plaster of Paris cast, and the patient sent to Southern Wisconsin the next day. I was sent for after three or four days to come and see the patient. The man had been kicked by a horse and there was quite a wound. I cut down, ran my finger all around, uncovered the limb, and found the man had an inch and three-quarters shortening. I told him I did not want to interfere with it. It was something like five or six days after the fracture had occurred. The limb, which had been greatly swollen, diminished in size, but was shortened to the extent referred to. I believe it to have been due to the plaster of Paris cast. But I arose to speak particularly of the question of shortening. I have seen cases at the end of six weeks that had no shortening, or none to speak of, but let the individual commence to walk and put a little weight on the limb, œdema takes place, and there is shortening. One of the ways to prevent shortening is to keep the individual from bearing too much weight on the injured limb until the callus is sufficiently hard that it will not sink with pressure, nor allow it to bend laterally. That is a caution I feel like advocating strongly. Keep the plaster on long enough, change it occasionally and keep the man on crutches; the weight of the legs is all the extension it needs.

Dr. Roth said that when he encountered a case of fracture, such as that under discussion, the first thing he did was to see what kind of a bed he had to put the patient in. He thought this was a very important point. If the physician did not secure a suitable bed in which to place his patient after the application of splints, he could not expect a good result.

Dr. Jackson: I have had good results in fracture of the femur in making my splints of bent iron, cut to the size to fit, using four strips. I keep up extension with weight and pulley. I had a young man who was kicked by a horse and sustained a fracture of the femur, the bone being broken just above the condyles at the knee. I do not think it was more than two or three inches. I tried one thing and another and found it was extremely difficult to hold the fractured ends in place until I got four pieces of bent iron and fitted them over the well leg, then putting up the fractured leg in that I had no further trouble. I only saw the leg once after that. It stayed in its place beautifully; there was no shortening. With the bent iron I have had usually good results.

Dr. Miller (closing): I am not only surprised, but pleased that my paper should have elicited so much discussion on the subject of

upon the support of the crust instead. I seldom do anything after the second dressing of a non-infected wound, except to protect the injured member with a light clean roller bandage till complete recovery takes place. Another thing in favor of Glutol is from an economical side. It is not expensive, is used in very small quantities, generally only once, a lot of expensive dressings required by other methods are saved and its application is painless.

In conclusion I wish to say that there may be many in this audience who have had more experience with Glutol than I, and if so, I would like to know if their experience has been as gratifying to them as mine has been to me. If there are any present who have not used it, I believe they will thank me later on for thus calling their attention to this preparation if they once give it a trial.

DISCUSSION OF DR. HOYT'S PAPER.

Dr. A. I. Bouffleur: I am glad, indeed, to hear Dr. Hoyt's able report on Glutol. Its action undoubtedly is of the same order as that of iodoform, as far as the chemical changes which take place are concerned. Iodoform itself is absolutely inert as an antiseptic. It has no virtues as an antiseptic excepting when placed in contact with growing cells. I believe that is the principal reason why it is useful to us, and it explains its effect upon tuberculous granulations. The subject of Glutol or its use has not been carried to that extent which the favorable reports from it would justify, it seems to me. I only know of a few instances personally in which it has been used, and these instances have not been favorable to the substance. The first time, I think, it was used in this city, was in a case of osteomyelitis, in which it did not prevent the formation of pus after a thorough curettement, and packing of the wound with a large quantity of the substance. That was one of the diseased processes in which it was especially serviceable in the hands of the originator. I have talked with a number of gentlemen who have used it, and some have expressed a favorable opinion, others not, but of all the opinions which I have heard upon the subject the experience of the physicians who have used it has been too limited to carry any weight. Dr. Hoyt has used it more extensively than anyone else I know of. I consider it worthy of at least careful consideration and trial by all of us.

Personally, I am an advocate, as you all know, of boric acid, not only because I believe it has mild inhibitory power, but because in solution it inhibits the growth of bacteria deeper in the tissues than any other substance that we have, unless it be acetate of aluminum, which is notoriously unreliable as to its solubility. I do not believe it has any germicidal power. Personally, I believe we should employ some substance which, in coming in contact with the discharge from the wound and being placed in solution, should penetrate the granulations. If we are going to destroy any infection that is present, boric acid does it to a certain extent. It is not a perfect substance to use, and possibly the liberation of the vapor of formalin by the cells themselves from this powder called Glutol, which is formalin gelatin, will fulfill that indication. However, this will be determined by more extensive experience and investigation in regard to its application in various sorts of wounds.

Surgical and Mechanical Relief for the S-calldeo Hopelessly Paralytic Cripples.

Willard (Medical and Surgical Reporter, October 17, 1896) presents his views as to the measures to be taken in the treatment of paralytic cases, as follows:

1. A limb contracted at the hip, knee or ankle is mechanically unfit for locomotion, but if brought into a straight line with the body it can sustain the weight.
2. Surgical measures, tenotomy, myotomy, osteotomy or excision are frequently required to accomplish this result.
3. Subsequent support by mechanical appliances is usually necessary, together with the temporary use of crutches, wheeled crutches, or other support.
4. By a judicious combination of these measures, a case having sufficient strength in the arms to assist in locomotion need not be considered hopeless.

The Doctor's Debts.

The New York Medical Record is authority for the story that a Vienna physician was recently sued for the amount of a bill which he refused to pay. He claimed, and in this was sustained by the court, that the practice of medicine was a privileged profession and not a trade, and that a physician's property could not be seized for the payment of his debts. The case was carried from one court to another until it reached the court of appeals, and in all the decisions were to the same effect, and the creditor lost his money.

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THE C. M. & ST. PAUL RAILWAY SURGEONS' ASSOCIATION.

With this issue we begin the publication of the papers read at the Fourth Annual Convention of the C. M. & St. P. Railway Surgeons' Association, held at the Great Northern Hotel, Chicago, November 12 and 13, 1896.

The program, as announced in a former issue of The Railway Surgeon was presented, and we feel warranted in stating that no meeting of railway surgeons has been favored with better papers or a more general and enthusiastic discussion than this one.

The papers were, by request, short and thoroughly practical, the effort being to present the advanced knowledge upon the numerous topics considered or to introduce the subjects for a general discussion.

Heretofore the work of the association has been supplemented by a surgical clinic by some prominent Chicago surgeon, but as there were over twenty papers to be presented that valuable adjunct to a successful meeting was of necessity not utilized. The papers were listened to and discussed by nearly one hundred men, over 50 per cent of the surgeons employed by the St. Paul system.

The freedom and completeness with which the various subjects were discussed could not but impress a listener with the great individual interest manifested by those present and the great good which such a close personal, friendly contact and thorough interchange of thought must result in. The two great aims of the individual members as well as the body as a whole, seemed to be the advancement of the science and art of railway surgery and the improvement of the relationship between the surgical and other departments of the company.

This association has some peculiar features which seem to have such a direct bearing upon its truly remarkable success that we deem them worthy of mention. In the first place, the question of policy is entirely eliminated by the absence of permanent elective offices. There is only one permanent officer, the secretary, and he is selected by the general manager and special agent of the company, a chairman being elected to preside during the meeting, who in turn appoints three members to serve with the secretary as an executive committee. The last meeting was presided over in a most able manner by Dr. W. T. Sarles of Sparta, Wis.

Another peculiarity of this organization is the absence of membership qualifications, fees and annual dues. All surgeons of the company are ex-officio members, and all the expenses are borne by the company.

This interest on the part of the officials is, to say the least, unusual, and we are sure that the favor which they show their surgeons in addition to granting them transportation for themselves and their wives is most thoroughly appreciated by the surgical staff.

There can be no doubt that the surgeon feels that if the company representatives are interested in the welfare of the injured employes to such an extent he, too, should manifest his interest by contributing to the scientific work of the meetings or at least by being present at them, if at all possible.

This is the largest body of railway surgeons holding annual meetings with which we are acquainted, excepting the National Association of Railway Surgeons, and we are sure that none hold more valuable meetings. We do

not hesitate to commend the plan nor to indorse the excellent work it is doing in the advancement of railway surgery.

It would seem unfair if not unpardonable to close this comment upon the work of this association without a reference to the work and worth of the efficient secretary and father of the organization, Dr. Albert I. Bouffleur, general surgeon of the C. M. & St. P. system at Chicago.

To those who know the doctor and his enthusiastic interest in railway surgery, it is no surprise that his energy and activity in the interest of his company and the surgeons along the line should result in just such an active working body as the one we have described. We believe his work is valued and appreciated by the management, as we are sure it is by the surgeons.

Result After Pirogoff Amputation at the Ankle.

At a recent meeting of the Philadelphia Academy of Surgery Dr. Addinell Hewson presented a man, thirty-six years of age, who, in December, 1895, had been subjected to a Pirogoff amputation at the right ankle, by Dr. Todd of Roxborough, on account of a crush of the foot. Considerable trouble from septic disturbances attended the after-progress of the wound, but after eight weeks the healing had sufficiently advanced to warrant his discharge from hospital, and after-care as an out-patient. The patient now presents a much shrunken stump, with a depression on the anterior and outer aspect where a slough took place. He is able to bear his weight upon the stump, but this is by no means firm enough for him to continue to use it, and consolidation is apparently not yet complete. To show, however, the exact condition of the parts, Professor Goodspeed, of the University of Pennsylvania, kindly took radiographs twenty-one and a half weeks after the injury. Two views were taken, determining conclusively the degree of bony union. In these the attached surface of the calcaneum appears not to extend entirely across the severed ends of the tibia and fibula, but the union is firm to the central portion of the tibia. This union has taken place more toward the posterior part of the severed surface of the tibia, and apparently not at all to the anterior portion of the tibial cut surface, from which was removed the piece of necrosed bone, and it can be seen that the space has not yet been filled up. They also show the tension of the tendo Achillis upon the calcaneum and the possibility of its rotation if the extremity is used to any extent. Owing to the injury as stated above there is 4.5 centimeters shortening. Attention was called to the artificial foot which the patient was wearing. The heel was well stuffed, and a great amount of pressure was removed therefrom by the quasi socket in which the leg was held from the tubercle of the tibia down to the ankle.

Dr. G. G. Davis said he thought the question of the Pirogoff amputation to be an interesting one. Dr. Hewson had stated that the bone had been removed to a greater extent than usual. Personally he believed in removing a very large extent of the tibia and fibula and in going very high up in performing this operation. The object of this is, in case the patient desires to wear an artificial limb, a cylindrical joint can be used in the mechanism of the ankle instead of two lateral joints. If the patient wears an apparatus without any ankle-joint, of course these remarks will not apply to so great a degree. The objection to this apparatus is the extreme breadth of the ankle, which attracts attention, as it is considerably broader than the normal ankle. If the amputation is done above the malleoli, as suggested, then the side irons can be applied close to the leg, and the addition will not make any greater thickness than would the extreme protruberance of the malleoli. If such an operation is done and such an apparatus is applied, one will have a result which is much less visible and will attract much less attention than one like that in question. In performing the Pirogoff operation, he preferred cutting the extremity of the calcaneum quite short. The difficulty in performing this operation is almost always in getting the part which remains attached to the tendo Achillis up against the extremity of the tibia. He did not believe in performing a section of the tendo Achillis, but rather in making the bone section extremely liberal, leaving a comparatively small piece attached to the tendo Achillis and removing the part high up on the leg.

Dr. Hewson added, with reference to section of the calcaneum, that if the incision is made obliquely with the long axis of the calcaneum the difficulty is increased, while if the incision is made vertically,—that is, with the long axis to the extremity of the tibia and fibula, greater ease in adjusting the fragments results. He agreed with Dr. Davis that a vertical section should be made, but his experience in these cases was that surgeons do not wish to take away any more of the calcaneum than they have to. When the final adjustment of the parts is being made, it may be found that there is not sufficient of the calcaneum to make the part comfortable, and, consequently, a second section has to be made. By using a more vertical incision, less difficulty in adjusting the bones results.—Annals of Surgery.

Extracts and Abstracts.

Laminectomy for Fracture of the Tenth and Dislocation of the Eleventh Dorsal Vertebræ.

By Cliff Lindsey, M. D.,
Surgeon to Fergus County Hospital, Lewiston, Mont.

Patient, William A., aged thirty-nine years, gives the following history: He was stacking hay in July, 1893, using a harpoon hayfork, when the two poles which held up one end of the cable on which the fork ran fell, striking him across the back in the lower dorsal region. They were green pine poles thirty feet long. He was knocked down and was unconscious for nearly three hours, and when he regained consciousness he was unable to move or feel anything in either leg. He subsequently found that he had no control over either bladder or rectum. He was brought into the County Hospital and treated by the surgeon then in charge, who diagnosticated fracture of the tenth dorsal vertebra.

I first saw him in January, 1894, or about six months after the accident. Very little had been done for him, no effort having been made to correct the deformity, not even making extension and putting a plaster cast on him up to the time I was called to see him. On examination I found the following symptoms: Complete loss of motion and sensation in both lower extremities, extending above the crests of the ilia, taking in all the region supplied by the lumbar and sacral nerves. He had no control over either bladder or rectum, could not be turned over in bed without being rolled in a sheet, and every movement causing quite a good deal of pain in the region of the fracture. There were four large bedsores over the sacral region. A considerable amount of gas would accumulate in the intestines, which would cause him to have colicky pains in the abdomen until it was passed off. There was quite a severe cystitis, the urine being loaded with phosphates and pus; it also contained some albumin and blood. The skin was dry, but not branny on the lower extremities. He complained of severe pain at times at the seat of the fracture, but at no other place. The toe-nails grew but very little, if any, after the accident, and the bedsores showed but slight tendency to heal.

Treatment.—I immediately put him in a plaster cast extending from his shoulders to his hips, using Sayre's extension apparatus. I washed out the bladder every day with an antiseptic solution; also used electricity, employing a dry chloride of silver cell battery, as high as seventy-five cells on him; also strychnine in conjunction with the electricity. I continued putting on the casts, applying a new one every three or four weeks.

In four weeks he could walk around the ward with the aid of two crutches, and at the end of six weeks could walk all about with a cane. After that the improvement, while steady, was slower than at first, until the 1st of March, 1895, when he again proposed an operation, I having previously advised him not to have one, owing to the length of time elapsing since the accident. I again urged him not to be operated on, but he insisted that he could not consent to remain in the condition he was then in while there was a possible chance of being cured by an operation; for when the cast was removed he was in about as helpless a condition as when he first received the hurt.

I at last consented to operate on him, which was done on March 16, 1895. Placing him on two tables of an equal height, I proceeded with the operation. There was some difficulty in getting him under the ether, owing to the vomiting, and it took nearly half an hour. I then made an incision five inches long directly over the spinous processes, and nipped off the spinous processes of the ninth, tenth, eleventh and twelfth dorsal vertebræ with a rongeur forceps, then dissecting off the deep attachments of the muscles with a periosteotome. I readily found the fracture and removed the small spicula of bone; but owing to the adhesions it was difficult to reduce the dislocation, yet I succeeded after nearly half an hour's work. I then stopped the hemorrhage by packing the wound with warm compresses of gauze. The venous oozing was quite severe from the bone. The cut was then closed up by a deep row of catgut sutures, and the outside with silkworm gut. Closing up all the cut without drainage, I dressed it with a large quantity of iodoform gauze and absorbent cotton (sterilized), then separated the tables, and, making extension, put on a good heavy plaster cast extending from his neck to his hips.

He rallied well from the immediate effects of the operation, and had very little pain. A catheter was kept in the bladder all the time. Everything progressed well, his temperature never reaching 99.2 degrees at any time until the 19th, when he had a uræmic convulsion, and during the day and night vomited about twenty times. On the 20th he had two more convulsions, and no urine was passed after the morning of the 21st at 3 a. m. He was vomiting every fifteen or twenty minutes during the night of the 20th and the morning of the 21st, and was lying in a semi-comatose condition all the time. On the night of the 20th he had two convulsions, and on the morning of the 21st three more, and he died in the last one at 11 a. m.

Conclusions.—I have no doubt that, if proper treatment either by operating or plaster

jackets had been adopted at the time of the accident, he would have made a perfect recovery. I examined the seat of operation afterward and found everything in fine shape, no pus and the vertebræ in place.—New York Med. Journal.

A Case of Anterior Dislocation of the Head of the Radius.*

By G. W. Boot, M. D., Hartley, Iowa.

The case I wish to report is one of a class of accidents that are of comparatively rare occurrence, yet from the poor results that may be obtained, and the possible legal complications that may follow, its consideration is important.

The case is that of a boy, aged five. His father reports that three weeks before he came under my notice, he fell from a low pile of lumber and dislocated his right elbow-joint. A physician was called, and the father supposed the dislocation was reduced, but the elbow still being tender and motion quite limited at the end of three weeks, the boy was taken to another physician.

On examination, it was seen that flexion of the forearm upon the arm was possible only to about a right angle. Complete extension was not possible. Pronation was not much interfered with. Supination was not possible, on account of pain.

On the anterior surface of the forearm, at the junction of the upper with the middle third, there was a tender spot. Just above the bend of the elbow was seen a prominence—not large. Palpation of this prominence, which was caused by the head of the radius in its abnormal position gave much pain. At the normal position of the head of the radius there was a depression. The head of the bone could not be felt there. This comprised about all the symptoms. A brother physician confirmed the diagnosis of anterior dislocation of the head of the radius.

Under chloroform anæsthesia, every means we could devise was used to reduce the dislocation, but no force we considered safe would accomplish it. Manipulation was of no avail. A prognosis of only a moderately useful joint resulting was given.

The disappointment of not being able to reduce the dislocation, and the possibility of being called to be a witness against a neighboring physician in suit of malpractice were incentives to look up the bibliography of the subject. The cause given for this dislocation are:

A fall on the hand with the forearm extended.

A fall on the elbow.

A violent pulling of the forearm, such as often occurs when a child is lifted by the wrist or forearm.

Excessive supination and excessive pronation are given as causes.

The action of the biceps is also a cause.

Forward dislocation is the most frequent of all the simple dislocations of the head of the radius.

Hamilton, out of thirty-two cases, had twenty-seven which were either forward or forward and outward, and five which were backward.

The following are given as the signs and symptoms of forward dislocation of the head of the radius

Flexion impossible beyond a right angle.

Supination not complete.

Pronation not usually complete.

Pain in the upper third of the forearm, due to laceration of the interosseous ligament.

The head of the radius is absent from its normal position, but can be felt in its new location, and on rotation of the forearm can be felt to move.

The prognosis is not so good as might be thought. Many cases are irreducible, even when seen immediately. Nearly all the authors consulted agree in this.

Sir Astley Cooper gives the histories of eleven cases. Two were irreducible from the first. One was seen six months after is occurrence. Reduction was not then attempted. Two cases were complicated by fracture. One interesting case was of gradual occurrence.

Roberts mentions one case that came under his notice that could not be reduced.

Danyan mentions the case of a girl, aged three, caused by being lifted by the wrist. This case was irreducible.

Malgaigne reports twenty-five cases. Of these six were not diagnosed until too late for reduction, eight were successfully reduced, and eleven were irreducible.

Moore in the "Reference Hand-book of the Medical Sciences," says: "The reduction of this dislocation is extremely difficult; indeed, such slight success has followed the efforts to effect a reduction that it is not easy to prescribe any formula for the purpose."

Theoretically, reduction should be accomplished most easily by traction on the forearm, counter-traction upon the arm with the forearm semi-flexed and semiprone, combined with direct pressure on the head of the radius. The joint should be dressed with the forearm in flexion at a right angle, or if anchylosis is not feared, in complete flexion. This is to remove the most common cause of failure—the action of the biceps.

Because of the insertion of the biceps all attempts at voluntary flexion of the forearm are apt to cause a renewal of the dislocation. If this action of the biceps cannot be overcome by

* Read before the Missouri Valley Medical Society, Council Bluffs, Iowa, Sept. 17, 1896.

the mode of dressing, tenotomy might be done to give the parts the rest needed for repair.—Medical Herald.

Penis Divided by Silk Ligature.

By James C. Kennedy, M. D., Brooklyn, N. Y.

A boy, aged fourteen, entered St. Catherine's Hospital with the following history: Being troubled with nocturnal incontinence of urine, for which he was frequently reprimanded, he determined to use extreme and radical measures whereby, at least his nightrobe would not be soiled.

He carefully applied over the urethra and around the penis, midway between the glans penis and the scrotum, rather nearer the scrotum, a double ligature of medium-sized silk, which was drawn sufficiently tight to prevent the escape of urine. On the following morning he was astonished to find the organ twice its natural size, and his carefully applied ligatures out of sight. Disappointed and mortified, he determined at all hazards to keep his secret. He suffered all the tortures of retention until the ligatures cut their way through the urethra, when an immediate mitigation of the symptoms, caused by retention, took place.

The accompanying symptoms of a violent inflammation soon compelled him to take to his bed, and a physician to be sent for.

Dr. M. found the boy in such bad shape that he advised his immediate removal to the hospital, where the following conditions were noted: Urethra cut through; left corpus cavernosum severed; right corpus cavernosum almost separated, yet uniting the extremities by the slenderest thread. It was noticed that the glans penis and its accompanying extremity maintained a comparatively healthy color, and it was surmised that in this slender thread of union was inclosed the artery of the corpus cavernosum, the branches from the dorsal artery of the penis which perforate the fibrous capsule must of necessity have been severed. Wet dressings were applied, and the penis supported for several days until cicatrization was complete. Then under an anæsthetic, a sound was passed into the bladder, the edges of the stumps freshened up, the extremities of the urethra dissected out and a circular piece taken from each, and the ends carefully sutured with the finest silk. The extremities of the left corpus cavernosum brought into apposition, the extremities of the right up to the small film, which held them together, this being left intact to insure nutrition. Silk sutures were passed through the edges of the separated corpora cavernosa, crossed and brought out through the integument; these were continued about the organ until all was closed, except the slender attachment which united the extremities originally, and which contained the artery of the corpus cavernosum.

Rubber protective, covered by iodoform gauze, completed the dressing. A soft No. 7 female catheter was left in the bladder for several days. The dressing was not disturbed for a week, when complete union was found to have taken place; the sutures were then removed, the fine silk sutures in the urethra remaining; the dressings were renewed every two days for a week. A small urethral fistula at the point left for nutrition was found.

Three weeks later this channel of union was cut away, the edges denuded, and flaps of skin from either side raised and brought together, completely covering the fistula which united in due time, leaving the boy with a respectable and useful organ. The minutest pin-point opening, through which an occasional drop of urine finds its way, remaining; this is being treated at present writing, and shows every sight of rapid closure. No evidence of stricture is yet noticed, a No. 17 French steel sound passing smoothly into the bladder.

The point worthy of notice here was the fortunate preservation of a single channel of nutrition, which was sufficient to sustain the vitality of the parts until the art of surgery came to the rescue.—Brooklyn Med. Journal.

Foreign Bodies in the Male Urethra.

By Harry C. Hays, M. D., Toledo, Ohio,
Assistant Physican, Toledo State Hospital.

Outside of an institution for the care of insane patients, foreign bodies in the male urethra are not very common, aside from the infrequent cases observed in small boys whose spirit of curiosity and investigation is worthy a higher aim, and an occasional accident, self-inflicted or otherwise, to a man while intoxicated. In most cases it is generally understood to be an indication of a more or less unstable neurotic temperament, which has as its motive the excitation or gratification of that sexual passion which is either perverted or has been so abused that its normal manifestation is impossible.

The following case is interesting, in that it shows to what extent it may be practiced by insane patients and how long the real trouble may be concealed, even when the physical suffering and mental distress is great, if the physician in attendance fails in his duty of making a careful physical examination, as is so often the case with this class of patients, outside hospital treatment. John R——, aged sixty-five, German; occupation, farmer. Form of mental disease, chronic melancholia; duration of insanity, several years. The patient came un-

der my charge from the care of another physician, who thought he was aware of the real nature of the trouble existing, respecting the genito-urinary system, and had pronounced it hypertrophy of the prostate, but had taken no steps to relieve the suffering, although he had had charge of the case for over a year. The clinical signs and symptoms were simply those of great pain and distress when micturition was attempted, the flow of urine being slow, interrupted, and at times suddenly stopped altogether, with intense pain in the glans penis. The necessity existed of passing water very often both day and night. The symptoms, as a matter of fact, were typical in all respects of stone in the bladder.

On attempting to pass a sound an obstruction was met immediately after entering the external meatus. This first foreign body could be plainly felt by taking the penis between the thumb and forefinger, and no great difficulty was experienced in extracting with a pair of simple artery forceps what proved to be a piece of rubber tubing or catheter about one inch in length with a diameter of one-quarter of an inch. It was covered with a deposit of urinary salts, but the lumen of the tube remaining open and lying lengthwise in the urethral canal allowed the urine to pass through without difficulty.

Passing the sound still farther, a second obstruction was met and its distal end found to be located at or near the peno-scrotal junction. This was easily detected on manipulation and seemed to be about three to three and one-half inches in length. Evidently either two foreign bodies were lying side by side, or one was turned upon itself and lying in the long axis of the urethra, as was the first. On grasping this with a pair of forceps and attempting its extraction, it was found that when traction was made the two ends moved forward at the same time, although only one seemed to be caught between the blades of the instrument. Finding that the loose end was in danger of penetrating through the urethral wall into the surrounding structure, an incision was made to the urethra, the foreign body serving as a guide, and with a pair of small forceps a large-sized hairpin was withdrawn. This was also covered with a deposit of urinary salts and rust, showing that it had been in the urethra some time.

Introducing the sound finally into the bladder, the unmistakable and characteristic click was produced which indicated stone.

The patient was allowed to recover from these two slight operations, and after getting him into as fair condition as possible, the median operation of lithotomy was made, with the result of extracting a stone weighing four hun- and nine grains. It was of the mixed or fusible variety of phosphatic calculi, on breaking up which its nucleus for deposit was found to be a piece of fine iron wire, coiled upon itself, and measuring in length when straightened out five and one-half inches.

This was as far as I thought practicable to pursue the investigation in this case, but our curiosity was aroused to the degree of wondering if perchance something more might not be discovered, either in the ureters or in the pelvis of one or the other kidney.

The patient, notwithstanding his age, condition, and length of time of his distress, made an uneventful recovery. The only thing necessary now is to pass a sound occasionally, to be assured that he has not introduced something more into his urethra.—Medical Record.

Median Calcanean Incision.

A. Landerer, Surgeon-in-Chief to the Karl Olag Hospital in Stuttgart (Centralblatt f. Chir., 1896, No. 36, pp. 857-859), describes a new and extremely valuable and simple method of removing the os calcis in case of disease of that bone. The simplicity of the procedure is such that, as the author remarks, it seems strange the method has not been reported long since, but an inquiry into American and European authors fails to disclose anything similar.

Professor Landerer calls attention to the fact of so much having been said and written during the past few years on the subject of tarsal resection, the reason probably being the great variety of cases and the consequent impossibility of following any single fixed plan. The method presently to be described has been recently employed by Landerer in five cases of extensive carious destruction of the tarsus and foot, and for osteo-myelitic necrosis of the calcaneum.

Beginning at a point either directly over or slightly above the insertion of the tendo-achillis into the lower rough part of the posterior surface of the os calcis, an incision is made by means of a strong resection-knife in the median line of the foot and directly down to the bone, then carried as far forward on the plantar surface as the individual case requires. By this incision the skin and subcutaneous fat are divided, the tendo-achillis split longitudinally at its attachment to the os calcis, and if the incision is carried far forward the external plantar artery is severed. The edges of the incision are held apart by sharp retractors, and the plantar fascia, together with the flexor digitorum brevis separated in the direction of its fibers. All tendons and tissues are retracted from the median line; then, aided by the scissors and periosteal elevator, the tarsal bones can be removed without difficulty. By removing the diseased os calcis, which is an easy matter, all the details of the tarsus can be reviewed, the

removal of the calcis leaving a large cavity, extending backward and downward. Through this gap, Professor Landerer has easily excised the external malleolus situated seven centimeters higher up. However; it must be stated, that the median calcanean incision is not indicated unless disease of the os calcis is present, or it is the operator's purpose to remove that bone. The cavity left by the excised bone is tamponed lightly. This method allows of excellent drainage, the wound-discharges escaping easily by reason of gravity.

If, as is usually the case, the periosteum is not affected and need not be removed, there is excellent functional result. Slight shortening of a few centimeters is present in the long axis of the foot, but is not troublesome, and is easily counterbalanced by a properly constructed shoe. The plantar cicatrix does not impair walking, as it retracts so deeply as not to be pressed upon.

This method certainly gives a better cosmetic and functional effect than do the usual methods, and for the ease with which it is carried out rivals Ollier's external angular and Guêrin's spur incision.—Brooklyn Medical Journal.

Conservative Surgery in the Treatment of Spina Ventosa.

Dr. Thiel (Centralblatt f. Chir., 1896, No. 35, pp. 833-837) reports an extremely interesting case of spina ventosa occurring in the service of Professor Bardenheuer at the Kölner Bürger Hospital. The case, a severe one in a girl of twelve years, had been unsuccessfully treated for upward of a year by the usual conservative methods. The index-finger of the right hand was the member affected, the middle phalanx being two and one-half times larger than the corresponding phalanx in the left index; not only being valueless, but a direct impediment to the usefulness of the hand. In order to restore the hand to its former usefulness, the following procedure was devised and carried out by Professor Bardenheuer with excellent results.

Chloroform and ether narcosis. Esmarch's anemia. A longitudinal incision was made on the radial side of the distal phalanx at its middle, and continued as far as the metacarpophalangeal articulation. Parts of the skin, the seat of tubercular fistulæ, were circumscribed and excised. The soft parts were carefully separated, particular attention being given to the tendons and tendon-sheaths of the volar and dorsal surfaces, and the entire middle phalanx removed. This was found to be diseased throughout, with the exception of a thin, bony lamella on the volar surface. It was the operator's purpose to replace the excised phalanx by substituting for it part of the basal phalanx. With this end in view, the head of the basal phalanx was brought into the wound, with as little injury to the tendons as possible, and was perforated transversely from the radial to the ulnar side. A silver wire was drawn through this perforation to serve as an axis on which the replacing portion of the basal phalanx might turn. The periosteum covering the basal phalanx was now incised in the median line of both volar and dorsal surfaces, the incisions extending from within one-quarter of an inch of the distal head to the junction of the middle and proximal thirds of the bone. A third periosteal incision was made in a semicircular manner on radial side, which served to connect the proximal extremities of the two previously made incisions. The bone was then fissured in the line of the periosteal incisions, care being taken not to injure the narrow strip of periosteum at the distal extremity which was left to serve as the periosteal bridge between the main portion of the basal phalanx and that part of it which was to replace the excised middle phalanx. The longitudinal fissuring is best done by means of a sculptor's chisel. A small saw may be used for the transverse separation. The mobilized piece was rotated on the silver wire as a pivot until it assumed the anatomical position of the middle phalanx, its volar surface, of course, becoming dorsal and vice versa, the silver wire being drawn taut to retain the bone in place. A catgut suture was introduced to connect the distal with the new middle phalanx. Previous to the introduction of this suture the joint surface of the distal phalanx should be slightly freshened. Hemorrhage was completely arrested, the wound closed without drainage, dressed, and a splint and bandage applied.

Following the operation the patient suffered from neither pain nor fever. The first dressing took place ten days after the operation, the wound was entirely healed with the exception of a small surface, one and one-half centimeters long, that was granulating. Eight days later there was complete healing. Massage was instituted from the time of this dressing to the middle of the fourth week; from then on, ambulant treatment.

It can now be completed demonstrated that the transplanted bone has been preserved in its entirety. A solid, bony ankylosis has formed at the site of the first internodal articulation. Active movements in the second interphalangeal joint are not quite satisfactory, but doubtless will become so by further treatment. Passive movements of the distal phalanx can be performed in almost normal extent. There is no impairment of passive or active motion in the metacarpo-phalangeal joint. The cosmetic effect is excellent, there being no appreciable difference between the two forefingers.—Brooklyn Med. Journal.

Miscellany.

The Alvarenga Prize of the College of Physicians of Philadelphia.

The college announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about a hundred and eighty dollars, will be made on July 14, 1897, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the secretary of the college on or before May 1, 1897. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope, having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga prize for 1896 was not awarded.

Massage and Movements in the Treatment of Fractures.

Dr. G. G. Davis of Philadelphia concludes a very interesting paper on the above subject as follows:

(1) It is my belief that massage and passive motion is not used to the extent that it should be in the treatment of fractures.

(2) That immobility of the fractured ends favors quick union with little deformity.

(3) That there are some cases in which, owing either to peculiarities of the fracture or the impaired constitution of the individual, the tendency to the formation of callus is marked. Motion in these tends to the formation of exuberant callus and deformity.

(4) There are others in which bony union is unduly delayed; disturbance of the fractured ends in these hinders union.

(5) It is wise to wait until the fractured parts are glued together, usually eight or ten days, before attempting any except the lightest massage, and any extensive passive motion after that time should be used carefully but diligently.

(6) Passive motion and massage when first attempted should be of the most gentle character, and not so violent as to disturb the relation of the broken bones.

(7) Any marked pain and inflammatory reaction following passive motion and massage is evidence that it has been too violent.

(8) The limb should receive massage and manipulation at each inspection or change of dressing, often daily.

(9) That in some cases it is advisable to administer such massage as is possible without removing the splints.

(10) That persistent stiffness, particularly in fractures or injuries of the wrist, is often due to rheumatoid affection locating itself in the injured region. Massage is valuable in the treatment of such.*

(11) Massage should be given to that part of a limb beyond the seat of fracture to preserve it in a normal condition.

(12) Such dressings and methods of treatment should be adopted as will allow of the greatest use of massage and passive and active movements consistent with proper retention of the fragments.—Annals of Surgery.

The Railway Hospital.

The following is an extract from a paper read before the New York State Association of Railway Surgeons, by Dr. Frank H. Caldwell:

A letter addressed to Mr. B. R. Swoope, Superintendent of the South Florida Railroad, and chairman of the hospital executive committee, requesting his views as to the necessity for, and the benefits of, a railway hospital, was answered in the following brief and concise manner:

"First, a properly organized hospital service is essential, in my opinion, to every railroad of any size, from the fact that it is almost impossible, if not quite so, to secure the necessary medical and surgical attention in case of personal injury to either passenger or employe through any other channel. Further, employes can receive medical treatment in a hospital with competent nursing and proper food, by which they are restored to health quicker than if treated elsewhere, and the company receives the benefit of having its men in their accustomed places, instead of having them filled by less competent persons.

"Second, the benefits to be derived from a hospital service are wholly mutual to employer and employe; the two are bound close together, and fully realize that their interests are common to a great extent, and each individual who contributes toward the maintenance of such an institution, feels that a certain part of the responsibility connected therewith is upon him, insuring greater success than could otherwise be attained. The employes receive whatever medical or surgical treatment may be required at less expense to themselves than could be had elsewhere, and in cases where employes have no families, a home is provided for their care and comfort while sick; in cases of per-

[1] The use of the local hot-air bath promises to be as valuable in limbering of stiff and contracted extremities as is massage

sonal injury the railroad has saved hundreds of dollars annually in settlement of claims, as well as in the payment of surgeons' fees which it would be compelled to assume, it being a well-known fact that the ordinary jury will decide a case in favor of the 'poor' individual injured, and against the wealthy, soullesss corporation, without regard as to whether the evidence exonerates the latter of all blame or not."—International Journal of Surgery.

Concerning Vacations.

Dr. E. H. Judkins writes as follows in the Journal of Medicine and Science:

Life is a conflict, a battle, in which the "survival of the fittest," as well as the success and longevity of the un-fittest, is sometimes peculiarly exemplified. In the struggle for existence, few of us can hope to escape toil and trouble. To labor is the common lot; genius itself is but a special aptitude for labor, steady, persistent, patient toil.

Some successful people, like poets, are "born not made;" but in this aggressive age and country, most of use are "self-made or never made." We are told—and most of noted persons named in the Biographical Dictionary, have experienced—that:

"The heights by great men reached and kept,
Were not attained by sudden flight;
For they while their companions slept,
Were toiling upward in the night."

It is the sweaty brow that wears the laurel crown. "Nothing succeeds like success;" but labor and sweat are essential to its realization. Success requires, as Carlyle said, "Sweat of the brow, and up from that to sweat of the brain; sweat of the heart, up to that agony of bloody sweat, which all men have called divine!"

Indeed, all men of genius and renown show that they had to "learn to labor. and to wait"—but not to wait for "something to turn up." They soon learned that to obtain any sure success in this world, they must be "up and doing." One must

"Seize this very minute.
What you can do, or dream you can, begin it;
Boldness has genius, power and magic in it,
Only engage and then the mind grows heated;
Begin, and then the work will be completed."

But, the efforts and energies that which half a century ago would have resulted in fame and fortune, now hardly suffice to place one upon the ordinary level. The country is so rapidly populating and competition becoming so intense and active, one has to "strain every nerve" to win in the race. To-day, we have intelligence, knowledge and education well-nigh universal; they are the common lot and heritage. As Professor Agassiz said, "the time has come when knowledge and truth must cease to be the property of the few—when they must be woven into the common life of the world." Civilization moves rapidly forward, with mighty strides, bearing its grand motto, "Onward, Improvement, Progress."

"And I doubt not through the ages one increasing purpose runs,
And the thoughts of men are widened with the process of the suns."

But amid the hurry and bustle of our American life, particularly in the cities, we find men "breaking down," their mental engines are overworked at high pressure. They strive too actively and worriedly to "keep up with or excel their perhaps better qualified brothers in the race."

"In the strife of brain and pen,
'Mid the rumble of the presses,
Where they measure men with men."

This is the crucial test; and here comes in play the vacation season to relieve the strain, recruit the system and prepare anew for the conflict. Vacations are the safetly-valves of our modern civilization. Recreation is re-creation. The over-taxed brain, the body tired and weary with the ceaseless routine of multiform duties, needs rest, relaxation. Hence, it has become a fashion, as well as a necessity, for people, particularly denizens of the city, to fly to the river, lake and sea, the mountains, woods and vale, for rest and quietude; and there obtain good, solid comfort amid the rural scenery, the quiet nooks and shadowy dells of primeval nature. How "many a time and oft" the tired merchants, weary accountants or clerks, the busy lawyer, physician or clergyman—as well as the toiling workman—cooped up perhaps in some heated city; how often they long for the country! One may be "all alone with ten thousand around him," still he sighs for the "sweet seclusion" of nature's own solitudes. He knows that in the sylvan shades and the white sunlight of the rural regions he will receive renewed health and energies for the earnest duties of life. If Sancho Panza invoked blessings upon the man who invented sleep, we should also praise the one who instituted vacations.

It is not good for man to remain forever in the same place, and thus he differs from a tree, which flourishes the more luxuriantly the more solidly it is rooted. With a human being, all physicians agree that a change of scene is the best medicine to prescribe for a tired or "routine tortured" person. And right here it is suggested that all doctors should manage to get a respite from the usual rounds. They owe it to themselves, as well as to their patients, to take rest from dispensing powders and potions, and see what "the rest of the world" is doing. Go to the mountains, lakes or sea; take a trip to Europe, or visit hospitals in the great American medical centers. Refresh the mind with new ideas, re-seed the fallow ground and rest the old notions for a season.

The writer once knew of a physician, so he

thought himself, whose boast was that he had practiced twenty-five years without a day's vacation; at the end of which time he was so rusty and in one rut, that he knew of but a single disease—with him—the liver stood sponsor for every disorder of which people complained; but this disguise of the ignorance of the doctor did not always satisfy even the ignorance of the patients, and when one of the attacks of biliousness was diagnosed as appendicitis, by a young physician who proved it such by a post-mortem upon which he insisted, the "old doctor's" spell was broken.

Circumstances afterward compelled him to visit near-by hospitals, where he saw and heard of some modern inventions as well as latter-day medical and surgical practice. Hence, we should try to rub off the rust while we rest and to take occasional vacations where we can encounter new ideas, then when anything is learned put it in practice and report results to the medical journals. While we take our play day, and get no end of new ideas, let us remember that the Journal, like the brook, "goes on forever"—so we hope—and it must get its summer vacation, second-handed, from us. Then let us write up what strikes up with vividness and force, even though out of proportion to its true value. Ideas are always acceptable, whether from practice or from play—as a "looker-on in Vienna."

Semi-Centennial of the American Medical Association.

In view of the fact that the next meeting, which is to be held in Philadelphia, June 1-4, 1897, will be the semi-centennial gathering, and that it will occur in a great medical center, and near the other great cities of the Eastern coast, the Committee of Arrangements for this meeting have already made provision for the accommodation and entertainment of the delegates by the engagement of the Academy of Music, Horticultural Hall, the South Broad Street Theater, and the large meeting rooms in the Hotel Walton and Hotel Stenton. As these large buildings are all within a short distance of the great railroad depots in the center of the city and are all situated within one block on both sides of Broad street, every department of the meeting will be conveniently arranged. At the last meeting of the association it was voted to devote the first evening of the meeting, Tuesday, June 1, to dinners of the various sections. The officers of the sections desiring to give such a dinner will please communicate with Dr. G. E. de Schweinitz, Chairman of the Sub-committee on Accommodation, 1401 Locust street, as early as possible in order that dining-rooms may be engaged or other entertainment provided. As it is expected that fully three thousand physicians will be present, the committee suggests that applications for accommodations be made as early as possible. It is hoped that every member of the association will make a special effort to attend. Further circulars of information will be issued by the committee from time to time. Individuals and firms desiring space for exhibition in the Exhibition Hall, which will be in the same block as the various meeting halls, will please apply promptly to the Chairman of the Sub-committee on Exhibits, Dr. Edward Jackson, 1633 Locust street, Philadelphia.

The Semi-Centennial of the Discovery of Anæsthesia.

The London Practitioner for October, 1896, is devoted to the celebration of the jubilee of anæsthesia. Dr. Frederick W. Hewitt, anæsthetist to the London Hospital, has an article on "The Past, Present and Future of Anæsthesia." Dr. Hewitt, it will be remembered, is the brilliant author of a most excellent work on the subject of anæsthesia. Public spirit in England, which has much to do in general with retarding the advance of the medical profession by interfering with free experimentation upon the lower animals and by condemning in an ultra-conservative English way new procedures in surgery, has advanced, on the contrary, the art of anæsthesia; and this, for the reason that deaths from anæsthetics alone cause profound disturbance of the public mind, and the consequent reaction against the surgeon in charge is very great. The result has been that special anæsthetists have been appointed to all the important hospitals, and anæsthesia is not instituted without very grave consideration and the most elaborate precautions to prevent accident. Dr. Hewitt is one of the best exponents of the art. He does not look forward to very great advances in anæsthesia in the future, as from the very nature of the case it must be difficult or impossible to find an anæsthetic which will be free from dangerous qualities. We may, however, hope for better combinations of the anæsthetics we already have, and possibly better methods of administration.

Mr. Geo. Rowell has an article on the Work of Simpson, Snow, Lister and the Hyderabad Chloroform Commission. He summarizes our present knowledge as follows: Chloroform is a dangerous drug, because of its deleterious effect upon the heart. If air limitation be carefully avoided and the patient's various symptoms carefully watched, an overdose should never occur. This being avoided, the risks during chloroform administration are mainly associated with imperfect degrees of anæsthesia, and the great risk lies in the occurrence of asphyxia, however produced. Although with experience and care the number

of chloroform deaths is capable of considerable reduction, yet chloroform is not, in spite of its advantages, the most desirable drug for routine use in producing anæsthesia; still it is of great value in cases in which, from some diseased condition of the patient or from the particular requirements of the surgeon, ether and mixtures are contra-indicated; and this, beyond doubt, is its true sphere of usefulness.

Mr. F. Woodhouse Braine, in an article on the Administration of Ether, recommends that nitrous oxide be given to the point of producing insensibility, and that then the Ormsby inhaler, in which has been poured about two ounces of ether, be applied; a single inspiration of air in the interval should not be allowed. This is a favorite method of administering ether in England, and seems to have many points in its favor, although the immediate effect of the nitrous oxide upon the patient is certainly not pleasant to look upon.

Mr. George H. Bailey writes on the Principles of Ether Adiminstration. Dr. Dudley W. Buxton tells the story of the Discovery of Anæsthesia, and Mr. Frederick Treves writes a short and valuable article on the Use of Anæsthetics in Operative Surgery. To make the picture complete, Dr. Alfred Hartley contributes an article on Anæsthetics from the General Practitioner's Point of View. Instruction in the art of administering anæsthetics is insisted upon by Mr. Marmaduke Shield. Mr. J. Milne Bramwell writes on Hypnotic Anæsthesia. Editorial articles on the pioneers of anæsthesia, Wm. Thomas Green Morton, the discover of ether anæsthesia, and Sir James Young Simpson, who first used chloroform as an anæsthetic, are adorned by excellent portraits of these two great men.—Medicine.

On Fractures of the Femur Caused by Twisting.

In the Berliner Klin. Wochenschrift, August 31, 1896, Tillmann reports five cases of fracture of the femur, caused by twisting the thigh. The violence seemed to him insufficient, and led him to an investigation of the subject, with most interesting results. In four cases the thigh was broken in the attempt to remove the boot, and in the remaining case the movement was the same, as the thigh was broken while the patient—a young man— was examining a wound in the sole of his foot. Three of the patients were men, aged nineteen, thirty-seven and forty-eight; and two were women, twenty-seven and thirty-six years old. The man of forty-eight years died as a result of his injury. He had suffered for ten years from tabes-dorsalis, while the woman of thirty-six years had shown the symptoms of this disease for two years. It is reasonable to suppose that the femur was weakened in these two patients by this disease, a possibility pointed out by Weir Mitchell in 1873. Charcot says that four per cent. of tabes-dorsalis patients present trophic disturbance of the bones. The other three patients were carefully examined, but they gave no symptoms either of tabes-dorsalis or of any other disease which would account for a reduced strength of the femur. Messerer has shown that although a femur requires from 700 to 1,000 pounds' pressure to cause it to break by bending, its shaft will give way under a twisting force of from eighty to 309 pounds, a force which is far too small to break off the head of the bone or to tear apart the ligaments at the knee or hip. Tillman attempted to verify these statements upon the cadaver, but he was able to break the femur by twisting in only seven instances. Two of these occurred in children of six and eight years of age, and the others were all in cadavers over sixty years of age. In the other subjects, owing to decomposition, the ligaments at hip and knee gave way. Dissatisfied, therefore, with the results, he looked up the three patients in whom fracture of the femur had no explanation, and at intervals since the accident of eight, five and three and one-half years respectively, he found every one presenting well-marked symptoms of tabes-dorsalis.—Medical News.

Use of Large Non-Pediculated Flaps for Plastic Purposes.

Krause of Altona reviews this subject at length in Volkmann's Sammlung Klinischer Vortrage, No. 143. The following abstract is from the Annals of Surgery: The fact that flaps of skin entirely separated from their surrounding tissues would heal, if transplanted, has been known for more than a century. Skin-flaps taken from the thighs were used to make artificial noses in India during the latter part of the last century. Although these operations were performed by craftsmen they were more successful than the surgeons. The latter did not succeed in their efforts to utilize non-pediculated flaps until the middle of the present century, when Wolfe was successful in transplanting a flap to form an eyelid after having removed the subcutaneous fat. After the introduction and general adoption of the Thiersch method, this one was abandoned. Krause was the first surgeon to attempt to use flaps of skin extending down to the adipose layer successfully. He at first, following the method of the Indian craftsmen, whipped the flap after having detached it upon three sides in order to produce an artificial hyperæmia, but since then has not done so, since this procedure seems harmful. The secret of success is most strict asepsis and the use of no antiseptic solutions or moist sponges, in fact a perfectly dry operation. He prepares a granulat-

ing surface to which the transplantion is to be made by baths, curettement and wet aluminum acetate or creoline dressings, all cicatricial and chronically inflamed tissues being removed. Hemorrhage is checked by gauze sponges. The part of the body from which the flaps are taken must be thoroughly cleansed, all antiseptic solutions being washed off with sterilized water. The flaps are cut off in the form of a longitudinal ellipse and are then shaped to the part to be covered. They are cut off with a scalpel between the cutis and subcutaneous fat. After dissecting up the tip, this is folded in so that the wound surface of the flap is covered as more and more of it is dissected up. If a very small amount of adipose tissue remains it will not interfere with the nourishment of the flap. The latter usually shrinks to two-thirds its original size longitudinally and a little less transversely. It adheres to the prepared surface as if glued on. Secondary hemorrhage is most likely to occur when a flap is placed upon the cancellous portion of bone. It is better to wait a few days before transplanting upon such tissue, because nutrition of the flap through newly-formed blood vessels does not occur until the sixth day, before this it is nourished by diffusion from the vessels, and this will be impossible if a blood-clot intervenes. Krause never transplants upon freshly-severed tendons or upon cartilage on account of the lack of sufficient nourishment for the flap. In transplanting upon the leg or arm it is not necessary to suture the flap. The dressing must, however, be most carefully applied. The limb should be massaged daily after transplanting ulcers of the leg. In nineteen cases of such ulcers which he transplanted fifteen were successful after a lapse of three and a half years. He used this method in forty-seven cases, in the majority of which he was successful. The special indications for this method are when extensive defects are to be covered upon the leg or arm, especially when the cicatrix is exposed to mechanical injury. The frequent ulceration of Thiersch's grafts under these circumstances renders these unfit for such surfaces. The conditions for a successful operation are strict asepsis, dry operation and thorough preparation of the area to be covered.

Calomel Hypodermically.

The calomel is blended with sterilized oil and every precaution observed to prevent infection with the needle. A long, strong needle is used and the fluid is injected deeply into the tissues of the right loin. No suppuration or nodosities follow. The maximum dose of calomel by this plan is five centigrams, about one grain. By this method the patient is spared the pain and inconvenience of stomatitis, and, besides, the action of the drug is more energetic and decisive.—Therapeutic Review.

Notices and Reviews.

The Uses of Suffering. By G. W. H. Kemper, M. D New York: Eaton & Mains, 1896.

This pamphlet, as explained by the author in his preface, "Is a plea for the goodness of God as manifested in disease and suffering." It points out the fact that we are all made better and stronger by suffering and shows the utility of disease and the necessity for death. The little book will no doubt bring comfort to many a sad heart and give new courage to many a faint one. It is written in a simple, easy style and is well printed on good paper.

Minor Surgery and Bandaging. By Henry R. Wharton, M. D., demonstrator of surgery in the University of Pennsylvania. New (3d) edition. In one 12mo volume of 594 pages, with 475 engravings, many being photographic. Cloth, $3.00. Philadelphia: Lea Brothers & Co., 1896.

This book forms one of Lea Bros.' Red Book Series of practical manuals, and we desire to commend its use for students in their practical work in bandaging and operative surgery. The various procedures are tersely and intelligently described, and splendidly illustrated. About the only criticism we have to offer is that the contents of the book have outgrown the title, and in the author's efforts to retain a small sized book he has inadequately described some of the important points of the treatment of fractures and dislocations, and omitted valuable details in his descriptions of operations.

In the treatment of dislocations of the shoulder and hip considerable space is given to old and barbaric methods of reduction, while the valuable principles, as formulated by Biglow and Gunn have been entirely omitted. The manipulations described would, in the reviewer's opinion, fail more frequently than succeed on the live subject. While there are several omissions in the details of amputations like the removal of the head of the metatarsal bone in amputation of the great toe, etc., the most vital one is that of neurectomy in amputations. Nothing is more important than primary neurectomy in amputations.

This book is more properly a manual of bandaging and operative surgery, and in studying it the student should always keep in mind that it is but a manual. As such we feel warranted in commending it most highly. It is printed in large, clear type, on good paper and in such a convenient size as to make its use handy during practical work in the laboratory.

A. I. B.

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CONTUSIONS AND THEIR TREATMENT.*

BY WILLIAM MACKIE, M. A., M. D., SURGEON IN CHIEF MILWAUKEE HOSPITAL, MILWAUKEE, WIS.

It has been suggested to me that contusions and their treatment would be a very appropriate subject for our discussion. They are of very frequent occurrence among railroad employes, and of a much graver character than those ordinarily met with on account of the magnitude of the contusing force, as a moving car or a fall from a moving train. I shall omit all reference to contusions affecting joints, bones, or internal organs, and limit the subject to the soft tissue.

A contusion may be defined as a laceration of the subcutaneous structures from external violence, the skin remaining intact or being only abraided, and not apparently primarily destroyed throughout its entire thickness. Two results are to be considered in the production of a contusion: First, the direct, the crushing and overstretching of the tissues. Second, the indirect, the forcing of the fluids of the contused part away from the point of contact of the contusing force.

First, as to the direct effect: The tissues are crushed together or against an underlying bone. As a result the loose connective tissue, small vessels and capillaries are lacerated; the blood and lymph escape and thus results the swelling. The extent or depth to which the destruction extends will vary with the magnitude of the contusing force. The subcutaneous tissue alone may be involved, or it may be torn from the underlying fascia. It is in this case, according to Gussenbauer, that the effused fluid is largely composed of lymph, be-

*Read at the fourth annual meeting of the C. M. & St. P. Railway Surgeon's Association at Chicago, Nov. 12 and 13, 1896.

cause of the laceration of the lymph vessels which pass through the subcutaneous tissue. With a greater force the muscles are torn, crushed or even pulpified. You are all familiar with the bluish appearance of the muscles in a limb crushed by a car wheel. The same condition may exist in a contusion. The larger veins may suffer, and it is from them that most of the blood escapes. The arteries, at least those of any size, are seldom injured on account of their elasticity and deep location, yet if an artery be compressed against a bone, the intima may be lacerated and a thrombosis result. In the case of injury to an artery with subsequent thrombosis may arise the question of amputation, or what is more unlikely a false aneurism may develop. This is to be distinguished from effused blood by its pulsation, always bearing in mind that this pulsation may be communicated from an intact vessel. If an artery be injured, and thrombosis incomplete, a bruit may be detected in the vessel, as found by Waldeyer in punctured wounds. The arrest of hemorrhage follows on the coagulation of the effused blood, and the equalization of intravascular and connective tissue pressure. When the blood is evenly distributed through the contused tissue, it feels firmer and more resistant from this infiltration. It may collect in large cavities, and gives a doughy or indistinct feeling of fluctuation if deeply situated, or if more superficial, fluctuation may be evident. Around these collections of blood a new connective tissue wall may develop, and the blood remain fluid for a long time—it is encapsulated. A sense of crepitation is occasionally to be detected from the fluid breaking up or passing through the connective tissue spaces.

The nerves are always involved, to a greater or less extent. There is a stinging sensation when the hand is struck against a hard object, due, according to Billroth, to a concussion of the nerves. This is only a temporary perversion of sensation, but if the contusion is more severe, it may continue for some time, and whether a neuritis may follow such a condition of concussion, is open to question. Further, the structure of the nerve may be partially destroyed; either the supporting connective tissue, the neurilemma or the nerve substance proper. the sheath of Schwann and axis cylinder. When this occurs there is immediate disturbance of function throughout the whole distribution of the nerve, indicated by numbness and tingling. Subsequently there may result a neuritis with its characteristic symptoms, pain along the course of the nerve, hyperæsthesia in the early stage, and later anæsthesia, muscular atrophy and the peculiar glassy condition of the skin The ultimate result will depend upon the regenerative power of the nerve. The fascia may be torn, but the tendons generally escape injury. The indirect results are due to the forcing of the fluids of the contused part away from the point of contact. From this point the fluids are squeezed out, as it were, and will follow the direction of least resistance. This is into the inter-muscular spaces, and along the course of vessels, where there is always more or less loose connective tissue. When the contusing force is kept up for some time, the quantities of liquid thus forced into the uninjured textures are often very considerable and in this way large cavities are formed. As pointed out by Ogston, muscles not firmly attached to their intervening septa are often detached from them and pass, without any connection, through the center of a cavity containing fluid blood. It is this forcing of the fluids away from point of contact that explains the appearance of discoloration remote from the site of contusion. The fluids having been forced along underneath the fascia, which gives way at its weakest point, reach the surface.

The subsequent course of the contusion is dependent greatly on the extent of the injury sustained by the skin. It remains intact, but its vitality may be so depressed that necrosis results. The appearance of the skin at first will not enable us to determine the extent of its injury. The larger the area of the contusing body, the less likely is it that gangrene of the skin will result. Sensation may be lost in the contused skin, yet its vitality remains. On pricking or incising there may be no hemorrhage—an indication of a devitalized condition. Still, subsequently the circulation may be partially restored so that the whole thickness does not perish, or the destruction may only occur in circumscribed areas. When the arrest of the circulation is absolute, gangrene results. Contused skin is always liable to infection from its diminished resisting power.

In the most favorable termination, the effused blood is removed by absorption. This is the rule where the extravasation is diffuse.

Where the blood is effused in large quantities it may become encapsulated as already pointed out. Contused muscle may be absorbed. Where suppuration follows, it is the result of infection, either from a small skin abrasion, gangrene of the skin, or the bacteria may be forced through the skin. (Tillmann.)

The symptoms of contusions are all well known. There is one, however, not ordinarily met with, present in railroad contusions, and that is shock. The greatness of the contusing force and the surroundings account for this. It is not different from ordinary shock, and is of short duration.

The remote results of contusion are various. Pain may persist for an indefinite period, due, probably, to some change in structure or compression of nerve fibres. There may be impaired muscular power, if part of the muscle has been destroyed, or adhesions may form between adjoining groups of muscle. In the former case a depression may mark the site of injury. A thickening of all the contused tissue often persists. When the nerve has suffered, and a neuritis follows, there will remain perversion of sensation, and motion to the extent of the nerve destruction, with atrophy of the muscle or muscles under its control.

The prognosis should always be guarded at first. The laity, and the profession likewise, are often satisfied that it is only a bruise. The condition of the parts is often deceiving. One should ascertain as accurately as possible the method in which the injury was received, the character and size or force of the contusing body, and whether its application was of short or long duration. These facts are of the greatest prognostic value. Take, for example, a man injured by being struck on the arm by a passing train, and another by having his arm caught between two "dead woods." The injury in the former would be trivial as compared with the latter, and yet to all outward appearances much alike.

The indications for treatment are the prevention of infection and subcutaneous hemorrhage, the alleviation of pain, the promotion of the removal of effused blood and contused tissue by absorption or otherwise, and the restoration of the parts to their normal condition. All contusions should be treated antiseptically, because we are unable to foretell the condition of the skin. We have also included contusions with skin abrasion—an opening by which infection may enter, and further, as Tillmann states, the microbes may be forced through the intact skin. The first step, then, is thorough disinfection of the injured and surrounding parts. For the prevention of swelling, cold and evaporating lotions have long been recommended. The vitality of the tissues is already lowered, and the treatment should be simulating rather than depressing. Cold will arrest hemorrhage and act as a depressant, hence its use must be condemned. The same applies in a less degree to evaporating lotions. The best means to arrest the hemorrhage is elevation and equable compression. With the parts elevated where practicable, they should be covered with several layers of antiseptic or aseptic gauze (the parts having already been thoroughly disinfected), then covered with several layers of cotton, and a bandage evenly and snugly applied. Some prefer dry dressings, but it has been my experience that patients prefer moist. In applying the gauze I moisten it in a hot, mild antiseptic solution, cover with disinfected rubber tissue, and over this apply the cotton. This is to be changed once or twice in twenty-four hours. Theoretically, the application of moist heat continuously increases the swelling by paralyzing the vasomotor nerves, and relaxing the tissues, and for this reason dry heat by rubber coil has been advised. Practically this objection does not hold. I have repeatedly observed that the substitution of a moist dressing for a dry one was followed by a diminution of the swelling. For the alleviation of pain, rest is to be added to the foregoing. If an extremity it should be fixed on a splint. Opium is generally necessary where the contusion is severe. It relieves the pain and allays that nervous excitement so often present. The absorption of the effused blood is promoted by the use of the moist compress. This takes place by transudation. Its removal may be hastened by a few linear incisions of the skin where it is tense. This also favors a more speedy return of the circulation in the skin by the removal of tension. The incision will heal by granulation or may be sutured on the subsidence of the swelling in twenty-four or forty-eight hours. Prior to antiseptic times, the treatment of contusions by incision was condemned until suppuration appeared. At the present time the large cavities

containing bloody fluid, to which Ogston first directed attention, should be treated by incision and evacuation of the blood clots. The cavity should be thoroughly irrigated with normal salt solution, a small tubular or gauze drain introduced for twenty-four or forty-eight hours, and an elastic dressing applied so as to obliterate the cavity as completely as possible. In default of this method of treatment, the fluid part should be removed by the aspirator. All collections of lymph in the subcutaneous tissue should be treated in the same manner.

If the skin should become inflamed, linear incisions should be made down to the fascia and not beyond, because the infection might be carried deeper. Satisfied that infection is confined to the subcutaneous tissue, we should apply our moist antiseptic dressing. This alone may prevent the infection extending under the fascia. When suppuration extends beyond the fascia then we should resort to free incision and tubular drainage.

For adhesions which may result, massage is of the first importance. It is also useful in promoting the absorption of the effused blood by mechanically forcing it into the lymph channels. Should a neuritis result from injury to a nerve it must be treated on ordinary principles.

DISCUSSION OF DR. MACKIE'S PAPER.

Dr. Spillman: I regard this as a very excellent paper, because it treats of matters we come in contact with almost every day and that sometimes annoy us a good deal. Of course, in the case of minor contusions we can allow them to rest and get well, but if they are really painful and severe they must have some treatment. I certainly agree with the views set forth as to treatment. I think immersion of the part in hot water, as hot as can be borne, is good treatment, but it seems to me in certain cases where we cannot attend to them very closely, a bandage over moist gauze and cotton is very excellent.

Dr. T. C. Clark I simply wish to say I find a solution of chloride of ammonia very useful, applied hot, or at least warm, to the outside of the compress to promote absorption of blood.

Dr. Marks: This is a very excellent paper and I have no criticism to make upon it, but merely wish to say that I believe that when the pressure is such as to cut off any part of the circulation of a limb, we should always open and allow the blood to escape. I believe that should be the rule. I remember the case of a boy who was hurt in the railway yard; I forget just how. I decided to operate, and believed and felt it ought to be done, but they wouldn't allow me to. He was taken to a hospital, and the third or fourth day I amputated the limb. I think if I could have opened it in the first place I could have saved the limb.

Dr. Stewart: I would like to report to the members a case which was unlike in its nature those that have been described, but similar in its appearance. A lady was picking berries back on the bluffs near Winona, when she was struck by a rattlesnake. I saw her an hour and a half after the occurrence. I found a wound five or six inches above the ankle that had exactly the same appearance as a contused wound. I injected first permanganate of potash in four or five different places one inch from the wound and waited about two hours until necrosis from the poison had occurred and then went right around the circle with a knife and removed the necrosed tissue and then kept the limb bathed for four or five days in a weak solution of permanganate of potash. Recovery was complete. The whole thing appeared like a contused wound. For the injection I used one-twentieth of a grain in about half an ounce of water. For the solution I used more and bathed the whole limb from knee to ankle.

INJURIES OF THE SPINE.*

By Dr. D. M. Cool, Faribault, Minn.

I have selected this subject for my paper because I felt that by eliciting discussion, I might profit thereby. The subject I have chosen to write upon (Injuries of the Spine) will embrace fractures and dislocations of the vertebræ, with or without injuries to the cord. I am aware that it is a subject covering a much larger field than I shall attempt to embrace in this paper. About 20 per cent of these injuries are fractures alone, about the same number dislocations, and about 50 per cent are dislocations combined with fractures. Many times there are a number of vertebræ broken and the injuries of the bones are quite extensive. This feature of the injury is of the

*Read at the Fourth Annual Meeting of the C., M. & St P. Railway Surgeons' Association at Chicago, November 13, 1896.

least importance. As in fractures of the skull, the injury to the brain is the predominating feature, so in fractures of the spine, it is the injury to the cord that is of such vital importance. When life is spared we may have paralysis of sensation, or of both sensation and motion, also of the sphincters of the rectum and bladder.

Like other fractures, fractures of the spine may be simple or compound, and simple fractures may be complicated with injury to the cord sufficient to destroy action, or even life. Injuries of the spine may be produced by falls, railroad accidents, gunshot wounds, caving in of embankments or mines, either of which may produce extensive injury not only to the vertebræ, but of the cord itself, resulting in immediate death or disabilities sometimes worse than death.

Hemorrhage sometimes occurs complicating the otherwise milder cases, by producing severe, if not irremediable compression. Very serious effects are also frequently the result of fracture of the vertebræ, with depression of the bone, compressing the cord, or at times completely dividing it as if cut with a knife. At other times small pieces of bone are forced into the cord, paralysis complete or partial, permanent or temporary, always attend such lesions. At other times concussion is the prominent feature; the patient is very sick at the stomach and looks pale, is helpless and the sphincters may be relaxed. Death may occur in this form of spinal injury, but recovery frequently takes place. Fortunately fractures of the spine are not very frequent in proportion to the number elsewhere in the bony structure of the body. I am not certain, but I think they amount to about three or four per cent of the total number, and dislocations about the same. It is claimed by some writers that the bodies of the vertebræ are more frequently fractured than the arches; there is apt to be displacement of the crushed bones, causing quite extensive lacerations of the cord. Even when the arches alone are broken, fragments may be thrust into the cord and cause serious injury. On the other hand, there may be fractures of the arches or even of the bodies without injury of the cord. If the fracture be compound, the aseptic finger makes the best instrument for examining the injury. A probe should never be used or, if necessity compels its use, great care should be taken not to injure the cord.

As a rule, one should not attempt to verify his diagnosis by eliciting crepitation, as in other fractures, except, perhaps, where the spines alone are broken, since the attempt might increase the danger to the cord or the nerves, given off at the seat of injury. The same rule holds good in determining excessive mobility and the diagnosis should be arrived at from the general symptoms. Usually there will be profound shock and tenderness of the injured part, and generally a well marked pain, surrounding the body on a level with the seat of injury. The patellas reflex and ankle clonus will aid in the diagnosis paralysis of the sphincters of the rectum and bladder, with numbness and pricking sensation of extremities, with paralysis more or less complete, will verify the diagnosis. The symptoms will, of course, vary according to the seat of the injury. If it is in the lower lumbar vertebræ (which is rare) the injury is below the cord and can only involve the caudal nerves, in which case the paralysis will be confined to the legs and if recovery takes place the gait is apt to be feeble; fractures of the spine are mostly above this point.

The seat of the injury can be ascertained by noting what muscles are paralyzed. One point will be of service to us, and that is the inflammation or myelitis will always extend upward in the cord and, of course, the paralysis will increase after the accident. It will be well to understand what muscles loose their power at first, and also from day to day, so as to be able to determine whether the myelitis is extending or not. In most of the text books you will find explicit indications, for the government, of ourselves, in minutely diagnosing these cases. Charcot, Allen Starr, Holmes and others have given, so far I know, reliable literature on this subject. These injuries are not so frequent that they present themselves very often, even to our best surgeons, men who have extensive practice, both hospital and private, yet any railroad surgeon may be confronted by a case of this kind, and that, too, when he least expects it. We should have a knowledge of our duties at such a time, and be able to render the needed assistance so necessary. Those injured in this way do not stand transportation seventy-five or a hundred miles, to

a hospital, where there are perhaps more skillful men than the average railroad surgeon. Again those of us who live in small towns have little experience in these cases and I hope, in the discussion that will follow, that those who have experience will give us the benefit of that knowledge, and by so doing bring out all that will be of service in their proper management.

While surgeon in the war of the rebellion I saw a number of these cases resulting from gunshot wounds, all of which were desperate cases. In a large percentage the injury to the cord was such that the men survived only a short time. Some of these lingered a long time before the end came, a few made a fair recovery; these latter had fractures with slight or no injury to the cord. In others concussion was the prominent symptom; the patients were nauseated, blanched and helpless with more or less paralysis, especially of the limbs and sphincters, and a severe sense of pricking of the skin, chiefly along the extremities.

N. G. Williams, colonel of my regiment at the battle of Shiloh, Tenn., had his horse killed under him, a solid shot passing through the horse, cutting the skirt of his coat off, and breaking the saddle, leaving both man and horse in a mass together. In this affair there was only concussion, neither skin nor bones being broken, yet he suffered severely from paralysis, retention of urine, and still suffers at times from the effects of the injury. For six weeks he could not empty his bladder, and for a time a catheter was used a number of times each day. He was then sent to a hospital, where the surgeon advised me from time to time of his condition.

The case of President Garfield, many of us will remember, was one of great interest. This was a gunshot wound with injury to the body of the tenth vertebra, as well as the tenth and eleventh ribs. The assassin stood to the rear and left of his victim when he fired, the ball being a large one (44-caliber) striking the president two inches to the right of the spinal column, fracturing the eleventh and injuring the tenth rib, and taking into consideration the position of the murderer and his victim, had it continued in a straight line it must have passed into his liver. Dr. D. W. Bliss assumed control of the case and used the probe freely. He announced to the anxious public by telegraph that the ball had passed into the liver, but owing to the president's extreme prostration, further probing would be dispensed with for a time, no mention having been made of the injured ribs. Had he bared his finger and introduced it into the wound he would have immediately found the fractured ribs, and, knowing that it would be impossible to tell the course of the ball, would simply have said "The ball has not been located." All this time the patient could not empty his bladder and complained of excruciating pain in the lower limbs and feet, which he himself described as being like the sticking of a million needles into his legs; still they claimed the ball had passed into the liver.

I mention this case to call your attention to the important symptoms of pricking and numbness of feet and legs, together with the inability to evacuate the bladder. Some of you will remember his suffering from retention, and on using the catheter, which afforded so much relief, the president looked his gratitude, and said: "Doctor, you can draw on me at any time." If we find loss of motion, pricking sensation, combined with loss of power to evacuate the bladder, it should call a halt, and we should recollect that in cases of injury like those of which I am speaking, that they are almost positive indications of injury of the spinal cord. In some of our text books there are tables showing in groups the location of injuries. All above the fifth cervical are apt to be fatal. Starr gives quite extensive tables, which are in part as follows:

The fifth cervical segment includes the skin of the outer side of the arm and foream, from the wrist to the deltoid muscle.

The sixth cervical includes the upper or radical side of the hand, forearms and arm to the axilla.

The seventh cervical supplies the middle of the palm and the dorsum of the hand; also the middle and ring fingers.

The eighth includes the ulnar side of the hand, the little finger and the ulnar side of the ring finger.

The first dorsal segment is a narrow one, supplying the inside of the arm and forearm, from the axilla to the wrist, but it does not extend to the hand.

It is useless for me to copy the entire table, but I beg leave to refer you to Starr's paper in the American Journal of Medical Sciences for July, 1892. Starr has also made a careful

study of local anæsthesia and uses it as a guide to the diagnosis of injuries of the spinal cord. The centers of the cord, which control the sphincters of the the bladder and rectum, must be adjacent to each other, as they are always affected together; the control over these sphincters is lost when the three last sacral segments are injured. The condition of the reflexes should be carefully noted, their presence or absence will aid us in our diagnosis. There are various ways of ascertaining or producing them, whether by sudden irritation of the skin, by drawing the fingernail across the surface, or tickling the skin by tapping or stroking certain parts, or by tapping or striking certain tendons. These are important guides in the matter of operation, as they are held to be an indication of the extent of the injury, whether the cord is wholly or in part destroyed.

If the cord is severed or injured so as to destroy its functions, there will be complete paralysis of motion, as well as of sensation, also complete and permanent absence of the knee jerk and other deep reflexes in both legs. In partial injury of the cord transversely, the paralysis and loss of sensation will be incomplete, and the deep reflexes are many times only exaggerated; this also applies frequently to the sphincters of the bladder and rectum. In the absence of these reflexes we would not, as a rule, operate, yet there are cases of this kind on record in which, even after bed sores had been found, operation revealed the fact that it was only depressed bones that rendered them absent, and elevating the same saved the patient's life. It seems to me that an exploratory operation would be in order, especially if the patient lived some little time; but the general conclusion is that where these reflexes are absent for some time, no operation is admissible.

Here is a point of great interest, which I will be compelled to pass over, but there seems to be a well fixed principle in the minds of those best informed on this subject that if we operate, the earlier the operation, the better. I think the rule is that if after two months the sphincters are still relaxed, little can be expected from nature, and an operation is justifiable; yet there are others who advocate an operation in all cases where there is displacement or crepitus indicating compression, and where extension immediately or as soon as possible, fails to reduce the displacement. This seems to be correct, for if the compression is allowed to remain, inflammation of the cord and its membrances would be apt to follow. Now, from what I can judge from my experience in these cases, as I said before, they do not bear transportation, on account of further lacerations of the cord and the suffering the handling is almost sure to produce.

Patients should be placed on a stretcher or board and the body immobilized by pillows of sand, or cushions, placed in such a manner as to prevent motion; an anæsthetic may be given and gentle traction made to reduce displacement which, if accomplished, sometimes is followed by partial recovery, and no doubt the earlier this is accomplished the better. If the injury is in the dorsal or lumbar portion of the spine, after the deformity has been corrected, a plaster of Paris jacket should be used to retain the fragments in place, as well as to give support to the body. This is applied in the same manner as in Pott's disease, and must be carefully watched, as it sometimes causes severe pain and paraplegia; if this occurs it must be removed.

Subsequent treatment will consist in the relief of pain, and the careful regulation of the diet; the latter is of the greatest importance. We must avoid bed sores if possible, which come early. We must be on our guard, and by the means of cushions relieve the pressure on prominent points and distribute it as evenly as possible over the surface coming next to the bed.

Later on, after all danger of inflammation has passed, electricity, massage, are indicated, and still later the active use of the legs, until the patient gains control over them, if so favorable result is ever attained.

There is one more point in all cases of injury, as well as of disease, that I wish to say a few words about, and that is diet.

This should be nutritious and within the ability of the patient to digest and assimilate; it is so common to find in a sick room, oat meal mush or some similar preparation or a piece of wet toast, that I would like to enter a protest against their use at such times. Let the food contain the greatest amount of nutrition in the least bulk, and that should be of a character not dependent upon mastication and insalivation for its digestion and assimilation.

Milk, eggs, oysters, all kinds of meats, animal broths, fish and fruit, and if the patient

is in the habit of using them, tea, coffee or broma.

Alcoholic stimulants if necessary.

DISCUSSION OF DR. COOL'S PAPER.

Dr. Hemenway: I do not know as I can remember any case, certainly of recent years, that I have had to treat where there has been a fracture or dislocation of the spine, positively diagnosticated, that death has not ensued. I have had, in fact, several cases where not only fracture of the spine, but other injuries were sufficient to cause death. One of the chief classes of cases that give us trouble with reference to the spine, are those in which the diagnosis is not sure, as for example: A freight brakeman, working at night, fell, some time ago, from the top of a very high box car. He fell upon his back across the rail. I am not sure that there was any fracture of the spine. I think the first lumbar vertebra was struck. I found no displacement and no crepitation in the examination I made. I, however, did not regard it of enough importance to make a very thorough examination at that time to distinguish between possible fracture and a simple bruise of the soft parts. I say I didn't regard it as of sufficient importance, for this reason: If there was a very slight fracture of the arch, for example, the treatment would be primarily the same as if there was no fracture, provided, of course, there was no depression. The collapsed condition of the patient was marked; although he was within nine miles of his home, I did dare attempt to remove him, but put him in a hospital and kept him there a week. I am inclined to think there was no fracture of the spine at all, though an abscess developed in that region which necessitated an aspiration; but as I say, in this case it is not important to clearly distinguish between a fracture without dislocation of the body of the vertebræ, but also dislocation of the arch, which would compress the bone.

I may have misunderstood Dr. Cool, but I would slightly differ with him in his proposed treatment if I did correctly understand him. It seems to me where there is a depression of the arch and paralysis we should always operate, and operate as soon as possible. If in a case where the diagnosis is not sure as to a fracture or dislocation, I would, whether there was the presence or absence of paralysis, postpone the operation awaiting results. If, after due time, the paralysis continued, and especially if the paralysis was inclined to increase, I would then operate. I most heartily agree in the suggestion that the best probe is the aseptic finger. I feel that the probe is much more frequently used than is best. For example, a boy was brought to me some time ago in whose axilla a probe had been used, and the result was an opening clear up to the bone, yet the most careful examination I could make of the case led me to think that the trouble was in the axillary glands and followed skin trouble. There was perhaps a little excuse in this case for the surgeon, inasmuch as there had been a previous abscess a year or two before.

Dr. Bouffleur: This subject is one of a great deal of interest because it is of such importance, and also the fact that it is something we are yet in considerable doubt about. There is no doubt but what we need a great deal of information, more particularly in regard to the import of the so-called loss of reflexes below the point of the supposed injury. Some authorities tell us that with the cessation of the conducting power of the cord by the injury, we should have the same symptoms that we would if the cord was cut off with a knife, which, as you all remember, is an excitation of the reflexes, and not a loss of them. That, however, has not been the case; it is shown in nearly all cases in which the cord has been destroyed by accident, that the reflexes have been lost. This is just an illustration of the fact that our symptomatology of compression and destruction of the cord is not complete and definite as yet.

As to the advisability of operating, I can best, perhaps, recite a few experiences. You have all seen cases of fracture of the spine, I presume, with the resultant paralysis below the point with some other disagreeable features and the permament invalidism of the patient, and while we find those who advise waiting in regard to treating these cases of injury to the spine, still, on the other hand, if there are any of you who have seen a single case of recovery after an operation, and seen that individual within a month out and walking around upon the street, you cannot help but contrast the condition of the two, and as far as

you are individually concerned, at least, you will operate in every case that comes under your care. I have had personal experience of this sort, and I know if I was to sustain an injury of the spine resulting in paralysis, that I should insist on an operation, and that immediately. To see a man with a paralyzed limb, both in sensation and motion, to find a marked deformity and to operate, and then within a few days see the sensation return, and later, motion, and see him within six months earning his own living as a carriage driver, is certainly a great incentive to the operative treatment under those conditions. On the other hand, perhaps some of you will say you have seen cases with some of these symptoms, perhaps all of them, and that after months, possibly years, they have regained the use of the members. Again, you probably have seen some that have submitted to an operation die very soon afterward. But give us one recovery to twenty-five deaths, if you please, because death is much preferable to continuous paralysis, and if we can get one recovery out of twenty-five, let us do so and give that one man something to live for, even if in doing so we endanger the lives of twenty-five. I think that is a justifiable position at the present time.

I would like to say, in regard to the time of operation, that there are two sides; one set of authorities will advise immediate operation, others will advise a late operation. They are both correct. In all those cases which come under our care where we can immediately get an antiseptic operation, by all means do it, regardless of the condition of the patient. If we had a strangulated hernia patient we wouldn't consider the matter of the shock, but the pathological condition causing the shock and desire to remove that. So with the spine; if the conditions are not good for an immediate operation, if we cannot do an aseptic operation, we must not do it at all, and if we cannot operate within two or three days we should wait and see what nature will do, and get the part in as good condition as possible for an aseptic operation subsequently. The operations which have given the best results are those which have been performed within the first two or three days, and those which have been performd after a lapse of three or four weeks. That can be readily understood, I think, because after three or four weeks the damage to the surrounding tissues has been recovered from and the danger from infection is much less.

Are all cases equally operable? Upon this you will find also differences of opinion, but I think that in general, operations about the cervical region are practically always fatal, although I believe there have been a couple of cases recorded where an operation in the cervical region has been recovered from. In the dorsal, and especially in the lumbar region, operations have been recovered from in many cases and the patients have been restored to useful lifes. I have not had the misfortune to have any cases of this sort in the last two or three years, but in the course of the two years previous to that I believe I had something like eight or nine cases in which there was a fracture of some part of the vertebral column, and in those cases where an operation was performed the individuals were not in any instance made worse by the operation; in one instance complete recovery took place; in another instance it was a late operation and the nutritive functions of the parts were very much restored, so that the patient regained a good nutrition of the lower limbs, and the improvement was permanent. In another case I think the operation hastened death a little; that was one which occurred to an employe of the Milwaukee road, in which there was an undoubted fracture, a communited fracture of two of the vertebræ, in which the operation demonstrated definitely the character of the injury to the cord. The patient was not improved by the operation, because the cord was destroyed for a distance of a couple of inches, and septic symptoms developed in the course of a week or ten days. I think I did him a good service in giving him the chance of the operation, perhaps in hastening his death, because he was a fearful sufferer; his injuries were exceedingly painful. I am sorry Dr. Johnson is not here, as he could perhaps recall the subsequent history of the case, as he had the man in charge. It would be interesting for all of us to keep a close watch of all of those cases and report them, so that they can be placed on record. We need a great deal of light as to the significance of the very symptoms Dr. Cool has brought out. It is only by careful observation and an accurate record of these symptoms and observations that we will ever be able to decide

more definitely and more intelligently than we are at the present time.

Dr. Marks: I would like to record a case. It was that of a man about fifty years of age, who came into the city and got very drunk. He started for home, and when within a half a mile of home got hold of the lines and drew his old horse on the railroad track and went to sleep. A very heavy freight train came along and the old horse went to the left, the wagon went to the right and the man went straight ahead and struck his head against the boiler. He wasn't killed, but his head was driven down between his shoulders and he ever after carried it in this position. It shortened his neck. What became of the spine? What was his condition, speaking pathologically? He couldn't move his head much. There was no paralysis, but he complained that his fingers felt "funny."

Dr. T. C. Clark: I think I can explain this case. We had a case in our town of a man who always carried his head around in this position. Finally he died and we examined him and found a dislocation of the atlas upon the axis. I think that took place in Dr. Marks' case.

Dr. Sugg: I had a case I would like to relate that may be of interest. Some years ago a circus came to our town. One of the men was coupling the cages together. He had one containing a bear, and the team he hitched to it wasn't accustomed to hauling that kind of game and became fractious. He started through a door, and there was a platform there that raised the wheels so that when the cage went through the door there was only about eight inches between the seat and the top of the door. As he started in he ducked his head and the door caught him just back of the shoulders; the team was unmanageable and kept on pulling. It finally resulted in breaking the seat upon which he was sitting and shooting him down in a narrow space and then out behind the cage. I was called a few minutes after the accident. The blood was running from his mouth and he was complaining of terrible pain in his feet. I supposed that he would soon be out of pain. We took him to his hotel and an examination revealed a protrusion, evidently a dislocation of one of the dorsal vertebræ, in the lower portion of the dorsal region. I had two or three men present and we made an extension. This reduced the dislocation at once. Much of the deformity disappeared in a short time and he said the pain was less in his feet. Within six weeks I suspended him and put a plaster of Paris jacket on. I saw nothing more of him for two or three years, when he again turned up in town with another show, apparently as good as he ever was, but still with a deformity in his back.

Dr. Hemenway: I would like to speak of one other case that came to my knowledge. I had to deal with a man who was thrown off a fast train on the Michigan Central some years ago, while the train was going forty-five miles an hour. There was a concussion in that case with immediate paralysis, but the next day the patient was not paralyzed to the same extent and recovery took place.

Dr. Sarles: Brain concussion, wasn't it?

Dr. Hemenway: Both brain and spine.

Dr. Marks: Was there any contusion at the same time?

Dr. Hemenway: Nothing that amounted to anything.

Dr. Plumbe: Let me ask Dr. Cool about one statement he makes in his paper. Did you ever know of an injury to the spine during the war, a serious injury, from which the patient recovered? Is it not a fact that in both cases you spoke of where the men walked off the field, that both eventually died from those injuries?

Dr. Cool: I had two cases in the regiment where there was a gunshot wound, breaking the spine of the vertebra and both recovered, no injury to the cord, just a shot cross ways of the body, going through the flesh. I can't tell now the exact point of the breaking of the spine of the vertebra. I never saw a case of recovery from a serious injury in the army.

Dr. Plumbe: I call up the case now, because I don't remember the exact time. It was some time during the early summer of 1862. I was dresser at a hospital on the Mississippi River. At that time we received two men, both of them with paralysis, total paralysis of the lower extremities, with incontinence of the urine and paralysis of the bladder; both of them walked off the field after the injury. One of them was a cavalryman and the other an artilleryman. The cavalryman's horse had

been shot and the artilleryman's horse had run across some obstruction, and, as he expressed it, had broke his back. He got up and walked to the rear. The other man got up and walked a hundred yards and lay down and was picked up and the hospital force carried him to the rear. The artilleryman, I suppose, walked about a mile. Both of these men exhibited all the symptoms of spinal injury and both of them eventually died from them.

Dr. Cool: Speaking of reflexes, I said, in the absence of reflexes we wouldn't operate. Here is another thing in regard to this dislocation of the atlas. Dr. Marks reported a case of injury to the neck which drove the head down so that his neck was short. I don't think dislocation of the atlas would do that. The reason he couldn't turn his head around was that he had a fracture. That man escaped injury to the cord. You may have dislocations and fractures and no injury to the cord.

CONSULTATIONS.

By Dr. Geo. Johnson, Savanna, Ill.

When prominence in the profession of medicine or surgery is reached, either by dint of hard study, close application, and the most complete and thorough clinical advantages, or by the smiles of paternal or matrimonial fortune, the happy, and we will hope the meritorious possessor of such distinction, indeed occupies a most enviable position among those of the profession who cannot claim ability above mediocrity. It is to such distinguished physicians and surgeons that the rank and file of ordinary practitioners turn for counsel, either sought for by themselves or demanded by their patients, into whose ready listening ears some friend (?) has poured the praises of this or that particular man, and it is from him that the one seeking counsel has a right to expect courteous and considerate treatment. The writer belongs to that class compelled occasionally to either send for, or send patients to some specialist, or some one eminent in a general way. He can recall many very pleasant associations with consulting physicians, where the good of the patient was paramount to all other considerations, while the rights of the attending physician were fully and kindly respected, and the consultation resulted, as had been hoped, for the benefit of all concerned. He can also recall cases where, unless the attending physician was present during the examination of the patient, the case was lost to him forever. Every physician knows that if an unprincipled man is admitted to the bedside of any patient he can convince him or her that the case is not being treated properly, and further, that he is positively certain of his own ability to save the case, and he gets the patient and the fee, while the attending physician gets the blame for not being wiser. I will give a sample case occurring in my own practice, the patient being a member of one of my "best families."

Mrs. F., the mother of three children, and in good health, with good family history, except that one distant relative died of tuberculosis, consulted me in reference to an enlargement of the sternal end of the right clavicle. No particular discomfort had arisen from it, but it was very annoying to her from a cosmetic point of view, and she was very desirous that something be done to relieve her.

Examination showed a prominence of the sternal end of the bone double what would be normal. There was slight if any, tenderness, with a peculiar mobility of the joint, of such degree that I diagnosed the case as one of partial luxation of the clavicle forward, and never having seen anything of the kind, I readily assented to the proposition on the part of my patient, "as she was going into Chicago on other business," she would "call and get the advice of Prof. Blank, as he would more fully understand her case."

She visited the city, was gone some weeks, and during her absence I received a letter from the professor, of which the folowing is a copy:

OPINION.

Chicago, May 9, 1893.

Dr. Johnson,

My Dear Sir;—I have carefully examined Mrs. F. and have caused an expert to examine her lungs. The latter (Prof. F. S. J.) judges the right lung to be in a suspicious condition at the apex, but that the physical signs are not decisive, and he reserves his opinion at present. As soon as he receives a sample of the sputum promised by her, he will examine for bacilli tuberculosi and report to you.

The right sterno-clavicular articulation is en-

larged and changed in form, giving at first glance an impression of dislocation.

As the occurrence of such an injury would be sudden, and could not be easily overlooked by the patient, and as she was totally devoid of any memory of the accident, I examined more carefully than usual.

I find the posterior border of the head of the clavicle back in its proper place, while the anterior border is only slightly advanced. The place of the joint proper is not vacant, but fully occupied by the bone. The anterior border is a little sharper and more knobby than natural and tender upon pressure. The end of the clavicle in not removed from the joint. It is movable and not anchylosed. The adjacent portion of the sternum, i. e., the right half of the upper end, is thickened and prominent. The rib just below the head of the clavicle is also prominent, and all three organs coöperate to form a sort of hill, or projection (of small size).

As the patient is of a tuberculous family, according to her account, there is reason to think that this articular and peri-articular thickening may be of tubercular origin, just like a tuberculous hip, knee, or other bony organ. This, however, cannot be decisively stated at present, but we should bear it in mind.

Tubercular joints in the early stages often recover under mere immobilization, just like a simple inflammation.

I advise that she desist from all lifting or other work with the right hand, and in every way keep it as immobile as possible.

Locally, I advise a lotion of strong alum water, containing 3 per cent of carbolic acid, or else zinc salts instead of the alum, but keeping carbolic acid.

She has lost strength very much during the last year. I suggest that she take, at present, quinine, iron and strychnia in full doses, etc.

I defer advising other medication until Dr. J. makes his report. Yours most truly,

"Blank," M. D.

Soon after receving the "opinion" Mrs. F. returned to her home, and I was summoned at once, and on entering I saw at a glance that something was amiss. She demanded why I had not "told her that she had tuberculosis," and not "subjected her to the humiliation of being told so in the city by a lot of strange doctors, after being repeatedly stripped for the purpose of examination, and reëxamination." In as dignified a manner as possible I told her the reason was because I did not know she had the disease, and further I did not believe yet that she had it.

But she was positive as "Prof. Blank" had decisively told her so and advised her to change climate, as a possible chance for her recovery. I then advised her to consult an eminent surgeon of my own choice, but she refused absolutely.

I never was permitted to treat the case further, and she drifted into various hands. Homeopathic and Christian Science experts had a chance at her case and her purse (a plethoric one), and she is yet, to all appearances, in good health, and "the little hill," "or projection," never seems to have made any serious impression on her outward appearance, although I am wholly unable to say just what a closer inspection might reveal.

I never received the report of the expert which was promised me after the "bacilli" were found in the sputum, in proof of the correctness of the diagnosis of a "suspicion" of "tuberculosis of the right lung," as sent to me, or the positivė diagnosis given directly to the patient.

Mrs. F. has no farther use for me, and I do not think she will again travel long distances to consult "Prof. Blank," and I certainly shall not recommend the Professor to anyone seeking skilled (?) counsel and treatment.

How happy the contrast between this wise Professor's treatment and that accorded me by one of this city's most prominent and talented professional men. In response to my message sent from the western border of the state about 3. p m., he was at the bedside of my patient at 10 p. m., and to his prompt aid and friendly counsel, I firmly believe, the restored life and health of a young wife and mother is due, and to him I certainly should again turn for advice, when in similar need. His tender attention accorded the suffering one, and kindly sympathy for the sorrowing ones, together with continued interest in the case, won for himself the lasting regard and esteem of the family. A splendid photogravure of him is the frontispiece in the September number of the "Chicago Clinical Review."

I claim that the attending physican has some rights which the consultant is by professional

courtesy bound to respect; one is that of having his own opinion given a certain amount of respectful consideration. He should not simply be made the recipient of a dissertation, containing, among other wise statements, such platitudes as: "It is movable and not anchylosed;" desist from all lifting or other work with her right hand, and in every way keep it as immobile as possible." Would not even the country physician know a better way to immobilize a clavicle than "to desist from lifting?"

A patronizing, condescending, egotistical manner on the part of the consultant, without a corresponding indication of ability, is not usually relished by other physicians any better than by the writer.

As this is a railway surgeons' meeting I know I am "off the track" and will close.

Birth and Death of Pain.

At a recent anæsthesia jubilee the following original poem, entitled "The Birth and Death of Pain," was read by S. Weir Mitchell, M. D., of Philadelphia:

Forgive a moment, if a friend's regret
Delay the task your honoring kindness set.
I miss one face to all men ever dear;
I miss one voice that all men loved to hear.
How glad were I to sit with you apart,
Could the dead master use his higher art
To lift on wings of ever lightsome mirth
The burdened muse above the dust of earth,
To stamp with jests the heavy ore of thought,
To give a day, with proud remembrance fraught,
The vital pathos of that Holmes-spun art
Which knew so well to reach the common heart.
Alas! for me, for you, that fatal hour!
Gone is the master! Ah! not mine the power
To gild with jests, that almost win a tear,
The thronging memories that are with us here.

The Birth of Pain! Let centuries roll away;
Come back with me to nature's primal day.
What mighty forces pledged the dust to life!
What awful will decreed its silent strife!
Till, through vast ages, rose on hill and plain
Life's saddest voice, the birthright wail of pain.
The keener sense, and ever-growing mind,
Served but to add a torment twice refined,
As life, more tender as it grew more sweet,
The cruel links of sorrow found complete,
When yearning love to conscious pity grown
Felt the mad pain-thrills, that were not its own.
What will implacable, beyond our ken,
Set this stern fiat for the tribes of men?
This none shall 'scape who share our human fates:
One stern democracy of anguish waits
By poor men's cots—within the rich man's gates.
What purpose has it? Nay, thy quest is vain;
Earth hath no answer: If the baffled brain
Cries, 'tis to warn, to punish—Ah, refrain!

When writhes the child, beneath the surgeon's hand,
What soul shall hope that pain to understand?
Lo! Science falters o'er the hopeless task,
And Love and Faith in vain an answer ask,
When thrilling nerves demand what good is wrought
Where torture clogs the very source of thought.

* * * * * * *

Whatever triumphs still shall hold the mind,
Whatever gifts shall yet enrich mankind,
Ah! here no hour shall strike through all the years,
No hour as sweet, as when hope, doubt, and fears,
'Mid deepening stillness, watched one eager brain,
With God-like will, decree the Death of Pain.

How did we thank him? Ah! no joy-bells rang,
No pæans greeted, and no poet sang,
No cannon thundered from the guarded strand
This mighty victory to a grateful land!
We took the gift, so humbly, simply given,
And coldly selfish—left our debt to Heaven.
How shall we thank him? Hush! A gladder hour
Has struck for him; a wiser, juster power
Shall know full well how fitly to reward
The generous soul that found the world so hard.

* * * * * * *

A solemn hour for such as gravely pause
To note the process of creation's laws!
Ah, sure, He, whose dark, unfathomed Mind
With prescient thought the scheme of life designed,
Who bade his Highest creature slowly rise,
Spurred by sad needs and lured by many a prize,
Saw, with a God's pure joy, His ripening plan,
His highest mercy brought by man to man.

—Medical News.

The tenth annual meeting of the National Association of Railway Surgeons will meet in Chicago, May 4, 5 and 6, 1897.

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THE ANNUAL MEETING.

We shall endeavor to keep our readers properly reminded that the tenth annual meeting of the National Association of Railway Surgeons meets in Chicago, May 4, 5 and 6, 1897. The secretary wishes to announce that already a number of papers having most promising titles have been pledged by surgeons prominent in the Association, and that everything is encouraging for a valuable meeting.

"CONSULTATIONS."

We publish in other columns of this issue a short paper by Dr. George Johnson of Savanna, Ill., which he read at the recent meeting of the C., M. & St. P. Railway Surgeons' Association, and in which he speaks very feelingly on the subject of consultants and consultations. We do not know why the paper was not discussed at the meeting, probably from lack of time, but there is certainly much to be said upon the subject. We cannot undertake to consider all the aspects of the question, but there are some things which we would like to say about consultations with specialists, inasmuch as Dr. Johnson takes up that phase of the subject in his paper. It seems to us that the advice of the family physician or the physician in charge of the case should always be sought as to the proper specialist to be consulted when assistance is needed; and, if possible, the regular medical adviser should be present at the first examination made by the specialist for the reason that he can best supply valuable data in regard to the personal history and constitution of the patient which cannot be supplied by the patient himself or his friends. If the family doctor cannot accompany the patient, perhaps to visit a specialist in a distant city, he should always furnish the consultant with a thoughtful letter containing all professional information in his possession which might throw any light upon the condition with reference to which the specialist is consulted, and especially should his letter contain those facts which the patient cannot or will not supply, and which in some instances a strange physician might hesitate to inquire about. Such a letter should, of course, be regarded as strictly confidential and its contents need not be known to the patient.

We quite agree with Dr. Johnson that the family physician should, in consultations of this sort, as well as those held at the bedside, communicate the results of the consultation, in so far as it is best for the patient and his friends to know, for in no other way can the true position of the family doctor be maintained and guarded. If, however, the patient consults a specialist in a distant city without even an introduction from his family physician, we can hardly call the interview a consultation, and if the specialist is obliged to work out the case unaided, we can hardly blame him if he frankly communicates the result of his examination, or, if he in turn calls to his aid skilled men in other departments, and the patient is told the result of their combined deliberations. As usual, there are two sides of the question.

We know it is the pleasant custom of some men in special practice to immediately acknowledge, personally, by letter or by telephone, the visits of patients referred by other physicians, even though no letter or card of introduction is presented, and this is as it should be; but we do not consider that there has been,

strictly speaking, a consultation unless the physician referring the case contributes in some way to the history or participates in the examination. The specialist failing to acknowledge cases referred to him is certainly remiss, and if he fails to freely consult with the family doctor, who sends him a carefully prepared history or report of the case, to accompany the patient, he is guilty of contempt and should suffer the consequences.

Sterilization of Catgut.

Details of the sterilization of catgut in boiling water after hardening in a solution of formalin have already been widely published. The results have not been in every instance satisfactory, and the matter receives exhaustive treatment at the hands of Hofmeister in the last number of the Beiträge z. klin. Chirurgie (vol. xvi, p. 775).

Complaints have been made that catgut so prepared kinks up in boiling, or that it loses its strength. Omitting instances in which it has been boiled in soda solution with instruments, instead of in clear water, the failures are mostly due to the fact that the catgut has not been tightly stretched on something during the boiling, or to an imperfect washing out of the formalin. The latter process requires a long time, and the odor of formalin is plainly noticeable in catgut, which is wound in several layers on a spool, even after it has been washed several hours in running water.

Hofmeister's perfected method is as follows: (1) The catgut is wound on a glass plate with slightly projecting edges, so that the gut is free from the sides of the plate and exposed to the circulation of the fluids. The ends of the gut are fastened through holes in the plate. (2) Immersion twelve to forty-eight hours in aqueous formalin two to four per cent. (3) Immersion in flowing water at least twelve hours to free the gut from the formalin. (4) Boiling in water ten to thirty minutes. Ten minutes is amply sufficient. Boiling for an hour weakens the gut somewhat. (5) Hardening and preservation in absolute alcohol containing five per cent of glycerin and one-tenth per cent of corrosive sublimate. After the catgut has been washed free from formalin it can be kept in alcohol and sterilized as required. It loses none of its strength—at least not in a month's time.

Experiments on animals have proved that formalin catgut is entirely absorbable, though not as quickly as the ordinary material.—Medical News.

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Extracts and Abstracts.

Interesting Cases of Injury to the Eye, With Special Reference to the Responsibility Involved.

By Joseph A. White, A. M., M. D.

In presenting for your consideration the following three cases of wounds of the eye-ball, I do so not because there is anything rare or uncommon in the nature of the injuries or the progress of the cases, but merely to awaken your interest in this class of accidents and to elicit some discussion of the question of the responsibility involved on the part of the employers All of us are aware that railway and other corporations are frequently mulcted in damages where they are not at all responsible, juries frequently having their sympathies aroused in favor of the injured person, and giving pecuniary compensation simply because it is an individual against a corporation. Whilst it is our duty to protect these corporations against such imposition, I think it is equally our duty to see that justice is done an injured person where there is any negligence on the part of the employers, even when we represent the latter in our professional capacity. I submit the cases as follows:

Case 1. D. S. R. J., aged 42, engineer on the Norfolk and Western R. R., was injured December 3, 1895., in the right eye by the bursting of the feed glass of the lubricator, a piece of the glass striking him in the right eye and cutting it open. The wound was at the inner junction of the cornea and sclerotic, and penetrated through the iris and ciliary bodies. The iris was protruding through the wound. I cut this off and applied an antiseptic dressing. I told him that in all probability he would lose the eye, as I was satisfied there was a piece of the glass from the broken lubricator inside. He protested vigorously that there could not be any of the glass in the eye, as he had seen the piece which caused the wound. I told him that, independent of the presence of the foreign body, the proximity of the wound to the ciliary region, rendered it exceedingly dangerous, not only to the eye that was wounded, but to the other eye. He said he would prefer my attempting to save the eye, as the left eye was damaged some years ago by an accident and was not perfect Through the month of December he came to see me every other day, and after the first week or ten days the eye began to improve. Just after Christmas, however, the tension of the eye became bad, and it showed evident signs of shrinkage. I urged him to have it removed as it was perfectly useless to attempt to save it, and it was endangering the sight of the only

eye he had. January 9, he consented to have it taken out, which was done under cocaine without any pain. On cutting it open, a long splinter of glass was found in the anterior part of the eye to the inner side, corroborating my first opinion. He now wears an artificial eye, and is one of those in whom the fit is so perfect as to deceive anyone but the greatest expert.

Case 2. J. A. C., 28 years of age, was working at the Old Dominion Nail Works, engaged in cutting scrap iron. A piece of the iron struck him on the right eye between the inner canthus and the cornea, splitting the sclera directly in a horizontal line for a distance of at least one-third of an inch, exposing the uvea which protruded into the wound. He came directly from the shop to my office the day of the accident, December 9, 1895. It was an ugly looking wound. All that I could do at his first visit was to render the parts as aseptic as possible and apply a bandage. This I did daily for nearly two weeks, when the parts were perfectly united. At his first visit there was considerable disturbance of the vitreous, whether from blood or serous effusion I could not determine. He could see little or nothing. At the end of two weeks his vision had much improved.

January 6, 1896, the wound had entirely healed up, was perfectly smooth outside, whilst the ophthalmascopic examination showed some remnant of the effusion into the vitreous in slight choroidal and retinal changes in the neighborhood of the injury.

On February 8 the eye was so good that his vision was 20-30. The president of the company happened to meet me about this time and asked me the condition of the man. I told him his eye, much to my astonishment, would be as good as it ever was, except in the immediate region of the wound, as his vision was now nearly perfect, just two months after the accident. The shops had diminished force, and this man was dropped out along with others. This put him in an ugly mood and he was disposed to demand damages on account of his injury. He asked me about it and I dissuaded him from any such thing. He consulted a lawyer, however, to whom he stated that his sight was very bad, and the lawyer, I believe, advised a suit. As I had said his eye was good, and he had stated it was very bad, the lawyer was loathe to undertake the case without having a re-examination of the eye; so he came with a letter from the lawyer on March 26, on which day he claimed to be perfectly blind in that eye. I examined him very carefully and came to the conclusion that he was lying, but still I wanted to give him every show, and I got my Chief of Clinic, Dr. Dunn, and also my assistant, Dr. Woodward, to examine him. Dr. Dunn decided that probably the man was right in his statement, as the contraction of the cicatrix had so distorted the parts, in his opinion, as to give some ground for his statement. By the use of prisms, however, I found he was malingering, and I also, on careful examination with the astigmometer and retinoscopy, measured the astigmatism, which resulted from the contraction. It was only 1.50. D. I wrote the facts to the lawyer, told the applicant I would kill his case, and in ten days he returned to me with his vision restored, so that, with correcting glasses, it was again 20-30.

Case 3. H. L., age 21, colored, was sent me from West Virginia, injured on the extension of the C. & O. R. R., January 13, 1896. He was preparing for a blast, and a piece of steel from the drill flew off and cut the eyeball. I saw him first, January 16. On that date the eye was very much swollen and inflamed, great œdema of the lids and conjunctiva, ragged looking wound of cornea downwards and outwards, and evidently inflammation of the interior structures. My diagnosis was suppurative choroiditis and I took it for granted that a foreign body had passed through the cornea and into the back of the eye. In the three days from the time he was hurt until he came to Richmond he had been treated by a physician, "local talent," near the place he was injured. I could do nothing except to advise enucleation. The eye-ball was removed under cocaine without pain. A careful examination failed to reveal any foreign body, but the retina and choroid were elevated by an accumulation of pus, a little to the outer side of the optic nerve. As there was no other evidence of purulent inflammation about the eye, I was at a loss to account for the pathological condition, and, moreover, I was astonished not to find a foreign body, because I could have sworn in advance that one was there. I happened to remark, to one of my assistants, that I thought this strange, when the negro says to me: "Boss, that is what the doctor up yonder said, because he done stuck his probe down in my eye and couldn't find nothin'." This remark illuminated the case at once. Anyone could see where the germ came from that caused the purulent choroiditis at the back of the eye, when there was no foreign body. The germ had been introduced by the probe. The case resolved itself into a simple wound of the cornea which, if let alone, would have, in all probability, healed perfectly and left a good eye; whereas, the injudicious use of a probe, that was not aseptic, resulted in its destruction. Had the physician been a local surgeon of the railroad, this man would have had a first-class suit for damages which would have had to be settled out of court, as the railroad could not afford to go into a trial.

Remarks.—The above three cases have been selected from a large number of injuries to the eye in railway and other service, because I thought they would more particularly interest

you from their bearing on the question of the responsibility of railroads and other corporations.

Case 1. Had his eye destroyed by the explosion of a feed glass of a lubricator. The bursting of these lubricators is not at all an uncommon thing, even in the experience of engine drivers, and on account of the risk of a destruction of an eye, it is proper that the railways should take every precaution against such an unfortunate accident. Each one of these lubricators is accompanied by a metal protector which, even if the glass tube bursts, protects anyone near from any risk of damage. The railroads should supply these metal protectors; not only should supply these metal protectors, but should insist that the engineers keep them on the lubricator, or else take the responsibility of serious damage on their own shoulders. If the railroads did this I do not see how they could possibly be held responsible. I have been interested in this subject since this case came under my attention, and find the accident is, as above stated, not at all uncommon. One engineer who works in the same yard with the man who was injured, told me that he had the same accident happen twice within the last three months, and exhibited scars on his face and ear where the broken glass had cut him. He also informed me that the railway did not supply them with protectors necessary to prevent the possibility of injury. I do not know whether this is true or not, but if true it unquestionably makes the railroad responsible for any injury to individuals, on the ground that they have not taken proper precaution to protect their employes.

Case 2. Although not a railway employe, was selected. because of the nature of the wound, similar to injuries of the eye I have often seen in railway service, and secondly, on account of the superb result from treatment, and third, on account of the man's attempt to extort damages from the company by pretending to be perfectly blind, when in reality he had good vision.

The slight distortion given to the corea might possibly have deceived an expert into supporting his pretensions, unless he had been familiar with the case, for the man was very shrewd in his attempt at malingering, when there was not only in all probability no responsibility on the part of the corporation, but the result gave him an eye nearly as good as before, and there was no possible excuse for demanding damages except the slight expense incident to treatment of his eye and loss of time from work.

Case 3, was one, as you can see at a glance by reading the history, where somebody was responsible for the loss of the eye, because there is no question under the circumstances, that the eye was irretrievably ruined by the attempt of the physician to locate a foreign body within it. Of course, you and I, and all of us, thoroughly understand that this was done with the best of motives; but the ignorance of the proper thing to do in a case like this, amounted, practically, to malpractice, and if this had been done by a surgeon of the road, the man would have been entitled to the largest damages permissible in such a case. As it was, he has no redress save a civil suit against the physician.

It is not out of place for me to say that under no circumstances is it permissible to introduce a probe into an eye to look for a foreign body. If it cannot be located with the ophthalfoscope it is better to trust to after-symptoms to determine its presence, as probing can only do harm to the delicate structures inside the eye.

In connection with these cases it may be also interesting to note that Case 1 was very positive there was no foreign body in the eye, although I found a large piece of the glass in it after removing it, whilst Case 3 was equally positive that there was a piece of steel in his eye, although none was found; showing that the statements of the patients are not at all to be depended upon under such circumstances. —International Journal of Surgery.

Traumatic Peritonitis and Rupture of the Bladder.

By Carl C. Warden, M. D., Ishpeming, Mich.

Joseph C——, twenty-three years old, woodsman, came to the hospital at midnight on April 8, 1896. He had been drinking heavily all day and had been unable to urinate since four o'clock in the afternoon. One hour before admission, during a drunken brawl, he was twice kicked in the abdomen. The patient complained of great pain in the hypogastrium and was in a condition of partial collapse.

Examination showed a small ecchymotic area in the right iliac region, the abdomen much distended and painful, and the bladder rising above the umbilicus. Catheterization brought away sixty-four ounces of bright bloody urine.

The following morning at seven o'clock the patient's condition was not improved. Forty-eight ounces of urine tinged with blood came away by the catheter, giving the man no relief. Distention and tympanites were evident. The patient developed a general peritonitis. Subsequent catherizations brought away a normal quantity of urine unmixed with blood.

On the evening of April 10 only a few drops of thick, dark-colored urine could be obtained. The man died early on the following morning.

The autopsy showed the abdominal cavity filled with serum, the intestines distended, agglutinated, and covered with patches of

lymph. A portion of the ileum lying in close relation to that portion of the abdominal wall which received the blows was gangrenous to the extent of four inches. The kidneys were normal and both ureters intact. The bladder was partially filled with clear urine. At the fundus of this organ was found a complete laceration one and one-half inches in length running posteriorly. The edges of the tear were uneven and grangrenous. The organ was otherwise in a perfectly healthy condition.

A diagnosis of rupture of the bladder was not offered without reservations. The quantity of urine drawn off at regular intervals during the man's sickness would indicate that the bladder retained its contents perfectly, and consequently the peritonitis could not have taken origin from leakage of urine, but from the lesion of the gut alone.

It seems probable that the rupture of the viscus extended primarily through the mucosa and muscularis coats, the serous covering remaining intact until a few hours before death. —Medical Record.

Union of a Severed Finger Tip.

By W. V. Gage, M. D., McCook, Neb.

On Monday, February 17, the patient, E. W——, while applying a lubricant to the chain of his bicycle, had the misfortune to catch the index finger of the right hand between the chain and the rear sprocket of the rapidly revolving wheel. The pressure of the opposing surfaces completely severed the finger at the root of the nail, cutting through the middle of the last phalanx. The accident occurred in a bicycle store, a block from my office, and a few minutes after the patient was under my care. On examination I found that there was not sufficient uninjured tissue to make suitable flaps, and a temporary dressing was applied, in view of an early operation, when it was my intention to shorten the bone so that I could utilize the tissue for flap coverings. About half an hour after the patient arrived in the office, one of the young men of the town brought me, as a curiosity, the severed end of the finger, wrapped in a piece of tissue paper. The fragment had passed through several hands since the accident, and had been used as the subject of one or two practical jokes, before coming into my possession, and was covered, as had been the hand of my patient, with dirt and oil deposited during the bicycle-cleaning process. Although realizing that there was little hope of success, I scrubbed the fragment with soap and water, and immersed it in a five per cent carbolic solution; I removed the dressing I had just placed, and fixed on the end, pushing the matrix of the nail which remained on the severed end well under the tissue, and then replaced the dressing. I did not suture, as I did not wish to cut with needle any small artery which might possibly furnish a source of nutriment to the severed end. Thirty-six hours after the accident I applied two narrow strips of adhesive plaster, crossing each other at right angles over the end of the finger, to guard against any possible accident from slight blow and dressed with iodoform and five per cent carbolic acid dressing. The end at the time looked white and lifeless, and there really seemed to be little chance of union taking place. The process of healing took fifty days; the skin and a small amount of the superficial tissue on the end of the finger dried and separated before union was complete.—Medical Record.

Sprains of Joints and Their Treatment.*

Because of their common occurrence, we are apt to overlook the importance of sprains, though the amount of damage in these injuries is often greater than it is in fractures. Constitutional causes, such as gout or rheumatism, and in some people a feebleness of the power of repair, have, it is true, much to do with the final result; excluding these, however, there are few injuries which yield more readily to the proper treatment, if we only observe two things. These are, first, to begin treatment at once; second, to see that our treatment is carried out in a thorough and systematic manner.

Before considering the question of treatment of these accidents, it might be well to consider the underlying anatomical causes which are responsible for most of these accidents. The development of the muscular system determines the strength and security of a joint. One can almost assert as a positive fact that sprains never occur unless the muscles are either weakened or tired out by prolonged exertion, or caught by some sudden slip, unawares, before they can recover themselves. Speaking generally, it may be said that sprains are the result of a twist so rapid and sudden that recovery cannot take place in time. The function of a joint is movement. Considering the way in which sprains interfere with this, the muscles which direct and execute these movements are as much concerned as the ligaments, which have only the passive mission of checking them when they become excessive. The question of diagnosis is, generally speaking, not difficult, though in sprains of some of the complicated joints, it is often by no means easy.

Fractures near joints and, in children, the separation of the epiphyses of the bones, must all be excluded. Without an anæsthetic, in the severe sprains of the larger joints, it is often impossible to make a positive diagnosis. Mus-

* John F. Culp, M. D., Steelton, Pa., in Medical Record.

cular sprains are, as a rule, distinguished by a peculiar sensitiveness of the skin, most marked over the joints or at the point of attachment to the bones or tendons. Very often, after the joint has almost recovered from a sprain, and an imperfect diagnosis or no diagnosis has been made, we can clear up the matter, with some joints at least, by carefully observing the tender points. A tender spot just back of the greater trochanter nearly always affords valuable information as to a hip-joint sprain. In the knee this tender spot is toward the under side of the knee cap, slightly below the joint center. With the ankle joint, while the sprain is constant, its location is not so constant, though it is usually toward the inner side of the external malleolus. The tender spots, probably, generally mark the location of adherent bands, or, perhaps, roughened synovial fringes, or sometimes spots where there has been extravasation of blood into the joint capsule.

Our results will depend on the earliness with which we see these cases, and on the thoroughness with which we carry out certain fixed indications. These indications are just three:

1. To limit the extravasation of blood and lymph.

2. To promote the absorption of effusion.

3. To promote the healing of the torn structures, and to restore the usefulness of the joint.

We can best control the extravasation due to broken blood vessels by local applications, by placing the joint in the proper position and by the use of judicious pressure and thus securing rest for the joint. Unless the cases are seen within one or two hours after the injury, or unless, later in the case, inflammation sets in as a complication, cold applications do not answer as well as do hot ones. Soaking the part in very hot water in delayed cases not only relieves the pain better, but it seems to produce a more permanent impression on the swelling. The various other local applications almost invariably owe whatever virtue they possess to the spirits they contain. We can, however, make an exception with the old time-honored lotion of lead-water and laudanum. Much may be done to check the bleeding from torn vessels by placing the articulation in such a position that the joint cavity is diminished. If left to itself, in most sprains, we find the joint in a condition of considerable flexion. While this position gives the most comfort temporarily, it conduces to a continuance of the bleeding, because it enlarges the joint cavity to its full exent. We can rely on the judicious application of pressure, however, not only to limit the amount of effused material, but to relieve the pain as well. Pressure, as usually applied by bandaging, does more harm than good. The bony prominences, which do not need it, receive the support, while the hollows and irregularities about the articulation do not get any at all. It has been my practice to loosely envelop the joint with a couple of layers of absorbent lint, which has been saturated with a lead-water and laudanum solution. Over this a good, thick padding of cotton wool is applied, care being taken to make it thick over the hollows and irregularities. Well-picked oakum is a good substitute for the cotton. A bandage carefuly applied over such a dressing will make the ideal compression and support.

Sprains of most joints, when treated with proper local application, position, bandaging and rest, do not require a splint. It is good routine practice, however, to exclude from this the knee and the elbow, the two most complicated joints. It is well, in these sprains, to apply a felt splint if the injury is at all severe. Rest in these cases is a necessity, and while it is the first indication in this class of injuries, yet, after the subsidence of the swelling, in most cases, we can begin movement within three or four days. Unless we have to deal with a rheumatic or gouty subject, this, as a rule, is not too early. Acute inflammation, so often dreaded as a complication, rarely comes on as a result of early movement. We must, however, know just what damage has been done before we begin to move a joint, or we may make matters worse. For example, in making passive motion in a sprain of the ankle, where the external lateral ligament is so often torn, it would be bad practice to adduct the foot. If, after cautious and well-regulated movements, the joint swells and becomes tender, it is well to wait at least a week or more before resuming movement.

The second indication, in treatment to promote the absorption, is to be met to a great extent by bandaging and rest. After two or three days, soaking the joint in hot water, or, better still, a strong solution of vinegar and salt, applied just as hot as can be borne for ten or fifteen minutes, three times a day, does much to soften and absorb the coagulated effusions. These baths should be followed by frictions with some good stimulating liniment, the rubbing being done firmly but gently in the direction of the return current of the lymphatics. It is a most excellent practice to begin these frictions above the seat of the injury in order to empty the absorbents, so that they may the better accommodate the lymph from the injured tissues. This lymph is probably more viscid than that found circulating in normal vessels. If after ten days the thickening about the joint has not disappeared and there still remain tender spots in moving the articulation and on making pressure, counter-irritation by iodine, or, often better still, by a fly blister, is indicated.

In two weeks' time with the treatment outlined, we will nearly always find the joint

which has been quite severely sprained, in good condition and ready for work. At this period sometimes, however, owing either to the severity of the injury or to some constitutional peculiarity, it remains painful and insecure, and even the slightest movement may cause acute suffering, with swelling. The joint structures are in a condition of subacute congestion. What is now needed is absolute rest, and rest must be had or there will be a long history of disability, which may become permanent. A plaster of Paris splint will nearly always give the required rest. Put on properly, it will last at least a month, when, as a rule, it should be taken off and the joint examined. It may be necessary to reapply this splint one or more times, though usually four to six weeks of this treatment is enough. We are now in great danger of carrying our rest too far; and it often requires the nicest descrimination to tell when to begin forcible movements. Forcible movements are movements made with some force, let us understand, and when we are of opinion that they are necessary to break up any adherent bands and to restore motion to the joint, they should be carried out in a thorough manner. Half-hearted, inefficient attempts do more harm than good, and, by producing pain and swelling without getting motion, often doom the joint to still further rest, when rest does positive harm. The trouble at this time is, to a great extent, in the muscles, which really are the true ligaments of the joint. Frictions, with stimulating applications, together with the use of electricity, are extremely useful in restoring their tone and strength. The faradi current in these conditions is probably more generally useful than the continuous current, especially if there be simply muscular wasting and stiffness without much pain. When there is marked tenderness accompanying atrophy, the galvanic or constant current meets the indications better, not only improving the nutrition of the muscle, but removing the pain as well. The various elastic appliances which are so frequently worn after sprains have much to do, very often, with keeping them weak and uncertain. They are of unquestionable value at times, but their indiscriminate use without the proper medical supervision does much harm. Constitutional treatment is often necessary; rheumatic and gouty patients often require colchicum and the iodides and the salicylates. Where there is a peculiar feebleness of the power of repair without any special diathesis, iron and strychnine are of great value.

In thirty-eight hundred cases of accidents were recorded two hundred and sixty-one sprains of all kinds, or an average of one sprain in about every fifteen accidents. The least time for treatment was three days; the longest time eight months. The general average was a trifle over nine days. Sprains of the wrist, the ankle, the back, and the knee were the most common, there being forty wrist-joint sprains, which were under treatment about six days. Knee sprains, while common, are not so numerous as those of the ankle, there being twenty-six cases in this record, which were under treatment on an average of about twenty-three days. Of ankle-joint sprains there were seventy-two cases, which got well on an average of about thirteen days. Sprains of the back were most numerous, there being eighty, with an average of eight days for treatment.

These back injuries were, with few exceptions, marked cured on the record, though, as a matter of fact, there are, it seems, few bad sprains of the back which are ever really cured permanently. In the total of eighty cases there was not one in which the spinal cord was seriously involved. The muscles or their tendinous attachments, or the investing membrane of the fascia, were almost invariably the parts to suffer. There were but two cases of sprain of the elbow, and the same number of the hip-joint, while there were thirteen of the shoulder-joint.

Ambulatory Treatment of Fractures in Children.

Bradford (Annals of Surgery, October, 1896) recommends the use of a modified form of Thomas' knee-splint in fractures of the lower extremity in children. Thomas' splint consists of two side pieces continuous below the foot with the two upper ends attached to a padded ring on which the patient sits. Bradford has modified this splint by adding a winch beneath the foot to which the adhesive plaster extension is applied, and also a hip-band fastened to the outer side of the perineal ring by a joint. The adhesive plaster extension is applied to the limb and fastened to the winch, which is then turned until extension is sufficient. Coaptation splints are also applied at the seat of fracture. The apparatus is confined to the leg by plaster-of-Paris bandages.

In fractures of the upper portion of the thigh the ordinary long traction splint as used in hip disease is advised with the use of coaptation splints. A cheap emergency appliance has been suggested by Dr. W. H. J. Hall. It consists of an ordinary wooden crutch strapped to the inner side of the thigh. It is allowed to project an inch or two beyond the foot and has an iron bracket secured to its lower end. In all these three forms of apparatus a high shoe is to be worn on the sound limb and axillary crutches used. The hip-band is to be used when it is desirable to correct any tendency to eversion. The patients are allowed to go around in about a week after the injury.

Miscellany.

Nerve Sutures and Other Operations For Injuries to the Nerves of the Upper Extremity.

At the last meeting of the Mississippi Valley Medical Society, Dr. A. J. Ochsner of Chicago read a paper of which the following were the conclusions: 1. Every severed nerve should be sutured even after years. 2. The earlier the operation is performed the better. 3. If neither sensation nor motion is established within a year, the nerve should again be exposed, the cicatricial tissue removed and the end again sutured. 4. The end should be clean cut, should contain neither crushed tissue nor cicatricial tissue. 5. Tension must be avoided. 6. The wound must heal without suppuration to secure the best results. 7. Hemorrhage should be perfectly controlled to prevent intervening clot. 8. Carefully prepared catgut is the best suture material. 9. After suturing the ends, either direct or "a distance," it is well to stitch a fold of fascia over the united nerve ends. 10. The extremity should be placed at rest. 11. The external incision should be ample.

The Medical School of the Future.

The October number of the Edinburgh Medical Journal contains an address which was delivered by Dr. John Struthers at the Medical School, Edinburgh, in 1895, of which the following is the substance:

Abundant illustration, says the author, that our sciences are ever on the move, rising on the proverbial stepping-stones of their dead selves to better things, could be given from his own recollection if he had time. It has been a half century of extraordinary progress, an age of inquiry, in which all that had been accepted as truth, physical, metaphysical and historical, has been subjected to the crucible; an age of inventions that have revolutionized our locomotion and our means of communication with each other; and much has been done to alleviate suffering and for the saving of life. Sanitary science and preventive medicine, largely new developments, have produced great results and raise hopes of still greater. In therapeutic medicine one might have expected changes; less so in more matter-of-fact surgery, but in it the changes have been still greater than in the medical side of practice. Not only painless operation, but, as regards the saving of life, the still greater boon of aseptic practice. The progress in surgery reads like a romance. The ophthalmoscope and the laryngoscope have done much in their limited sphere; but it is mainly to the improvement and the general use of the microscope that we owe the great progress, opening a new world to us into which the naked eye could not penetrate. Thus one new instrument may bring an era in medicine. In short, says Dr. Struthers, almost everything in surgery and medicine has changed.

What, he asks, is the lesson of all this to teachers and to students? To teachers, is it not that our duty is to take our students to Nature, to what we call practical work, and there to train them to observe and to think for themselves, and that all our teaching should be imbued with the spirit of inquiry? To students, is it not that they should seek and appreciate that kind of teaching, in preference to the kind that feeds the memory with verbal knowledge; that they should keep an open mind, and that whatever they hear should be received with what has been called the slow consenting academic doubt?

This training of the student to observe and think for himself, he continues, is by no means so easy a thing as may be supposed by those who know him only in the crowd or when he is somewhat advanced. It is the teacher of anatomy who is struck with that. Set the beginner down to a bone with his book, or let him hear a lecture of the usual kind; examine him and you will find he has not really seen anything. He has followed his previous habit at school, has learned his lesson and is ready to repeat what he has read, or more or less of what he has heard. He has to be taught to look and see at every statement that it is so. He has a sacrum before him and you ask him whether its length or breadth is the greatest. He had not thought of that before, but readily says its length. You put into his hand that useful training instrument, a little foot-rule, and ask him to measure. He finds that his eye has misled him, and learns the value of measurement. That may be of no moment for its own sake, but it trains him to observe, and he will have a sharp eye in his clinical work. At the first, fresh from his school method, he seems to think this a waste of time, but he soon discovers a new power within him, and he delights to exercise it.

Dr. Struthers impresses upon teachers of anatomy the responsibility that rests with them in giving the student the right start in method. It has been said, he says, that the value of anatomy is that it trains the memory, and that is an entirely erroneous method of teaching anatomy, for, although the dissection may be on the table or even in the demonstrator's hand, the teaching is too often verbal, addressed to the memory, and the students spin off answers from memory without being able to recognize the object when handed to them. The author thinks that much time is wasted in the anatomical lecture room in putting for the memory details for which the practical rooms

are the right place, and that the opportunity is lost of directing the student's eye and thought to the really important and interesting things of anatomy. In regard to the present system of the medical schools, he thinks there should be more practical work, more going to Nature, and less time consumed in the lecture room. In the last twenty-five years, he says, the amount of lecturing has been increased. Special departments have been split off, with the inevitable addition of special courses of lectures, while the general courses have not been shortened. Classes more or less practical have been added in nearly every subject in the curriculum of study, without the corresponding diminution that should have taken place in the time occupied with lectures. The result is, continues the author, that the student is pulled about from class room to class room; hardly settled to his dissection or to some other laboratory work when he is summoned off by the lecture room bell.

Dr. Struthers quotes the following definition of what practical work should be, which was delivered by the General Medical Council four years ago, when these questions were fully discussed and the resolution was taken to extend the period of study to five years:

"Due time should be set aside for practical work in the various subjects. By a practical course is understood one in which work is done by the student himself, under the direction of a duly qualified teacher."

Then as to the amount of lecturing:

"The regulations requiring attendance on systematic courses of lectures need not require attendance on more than three lectures weekly in any one course."

In regard to the work intended for the new fifth year, now impending, the purpose of the Medical Council was that it should be entirely devoted to clinical work, as thus expressed by the council:

"The fifth year should be devoted to clinical work at one or more public hospitals or dispensaries, British or foreign, recognized by any of the medical authorities mentioned in Schedule (A) of the Medical Act (1858), provided that of this year six months may be passed as a pupil to a registered practitioner possessing such opportunities of imparting practical knowledge as shall be satisfactory to the medical authorities."

They are before us in France in having thought out these questions, and the system in Paris, started shortly, is: The first, the better, half of the day is set aside for the hospital and for practical work in the laboratories; no lectures allowed before two o'clock; and the number of lectures in any course are two or three a week, never exceeding three. No one will say that medicine is not well taught in Paris.

That, says Dr. Struthers, may be taken as his ideal of a medical school of the future. There may be difficulties to overcome and the transition may be gradual, but it is manifest that the modern demand for more practical teaching in all the branches and for more clinical work will oblige the schools to move in that direction. It has been suggested to him, he says, that it would be well if all lecturing in our medical schools could be stopped for a couple of years, so as to throw us upon our resources for the giving and acquiring of real knowledge. Lectures will always deserve to hold a high place in medical education when they are of reasonable number and of a high order; the teacher going before his assembled class not as grinder but as a commentator, guiding and inspiring his students, introducing more or less demonstration or experiment according to the nature of the subject and of a kind suitable before the crowd. In such a biweekly or triweekly lecture there will be more benefit from the living voice and more of the intellectual atmosphere than in the kind of lecture in which a stream of information, nearly all of it already in the student's hands in the printed page, is poured from day to day upon the memory.—N. Y. Med. Journal.

Death Eighteen Hours After the Introduction of a Bougie Into the Urethra.

Muller (Centralblatt fur die Krankheiten der Harn- und Sexual-Organe, 1896, B. vii., H. 3, p. 137) has reported the case of a man, thirty-eight years old, with a history of gonorrhea in youth, who came under observation on account of some difficulty in micturition. He had previously been treated for stricture of the urethra. The urine was turbid, and passed in a small stream. A diagnosis of vesical catarrh, with moderate stricture of the urethra, was made, and to determine the degree of narrowing, metallic sounds were employed. A No. 21 conical instrument, with a long curve, was first gently introduced, with due antiseptic precautions, and an impossible obstruction encountered in the membranous urethra. With still greater care, a No. 23 sound was next used, but also without success. The examination was unattended with pain, and but little blood was lost. A prescription containing uvaursa and sodium bicarbonate was given, and the patient sent home. Three or four hours after the manipulations, and immediately upon taking his medicine, the patient was seized with vomiting and diarrhea, followed by chill, restlessness, general prostration, pains in the chest and in the sacral region, and excessive thirst. Eighteen hours after the use of the bougies the patient died, amid symptoms of cardiac failure. Upon post-mortem examination, the heart was found to be slightly fatty and the lungs edematous. There existed cloudy swelling of liver, spleen and kidneys. Portions of kidney were put aside for histologic examination, to deter-

mine if nephritis existed, but were inadvertently lost. The ureters and pelves of the kidneys presented no abnormality. A tight circular stricture was found involving the membranous urethra, and, close by, several diverticular depressions of the urethral mucous membrane, one of which appeared to have been recently eroded. Copious greenish pus escaped from the prostate gland. The mucous membrane of the bladder was in a catarrhal state; the viscus contained a small amount of turbid urine. The opinion is expressed that the fatal issue in the case reported is to be attributed to an acute nephritis, induced, perhaps, through the introduction of pus from the prostate through the erosion in the urethra.—Medical News.

Fracture-Dislocation of Shoulder Reduced by McBurney's Hook-Traction Method.

At a recent meeting of the College of Physicians of Philadelphia, Dr. Thomas S. K. Morton reported a case which he had under care in December, 1895. A man, aged seventy-four years, of large frame and well preserved, was thrown from a trolley-car, striking upon his left shoulder, and was subsequently immediately admitted to the Pennsylvania Hospital. There the resident surgeon diagnosed dislocation of the head of the humerus and attempted reduction. Almost at once a snap was heard and evidences of fracture of the humeral neck presented. Dr. Morton was then summoned and found the head of the bone tightly wedged beneath the clavicle and almost complete paralysis of motion and sensation throughout the extremity. It was impossible to move in the least degree the head of the bone by external force. The man being apparently permanently disabled by the injury and probably destined to be a great sufferer from pressure symptoms incident to the head of the humerus resting upon the brachial plexus, and, furthermore, being in excellent condition for anæsthesia and operation, the latter was decided upon, with the idea of drawing the fragment into position by means of the hook-traction described by Dr. Charles McBurney (Annals of Surgery, Vol. XIX, 1894, p. 19), or, this failing, to excise it. Accordingly a hook similar to that of McBurney was improvised and anæsthesia by the ether-oxygen method induced. The deltoid was vertically split upon the outer aspect of the joint and the shaft of the humerus well exposed. It was then ascertained that a comminuted fracture existed. A number of small fragments laid externally while a long spicule, connected with the inner aspect of the head, ran downward in the axilla for two inches and a half. This could not be adequately exposed until a portion of the pectoralis major and the long head of the biceps muscles and been divided. Then a hole was drilled in the fragment and the end of the hook placed in it. But as soon as traction was made upon it, the bone, which was exceedingly soft and evidently the subject of fatty degeneration, gave way and the hook pulled out. Another hole was drilled at a point three-quarters of an inch below the head and traction again made. By very greatly increasing the traction force the head left its position beneath the clavicle and came to the edge of the glenoid cavity, here the hook again tore out, bringing away a considerable portion of the long, sharp spicule of shaft. But finger-pressure now easily directed the bone into the glenoid cavity. Silver wire sutures were employed to hold the head and shaft to proper position, all loose fragments removed, a large drainage tube introduced, and an aseptic dressing applied after suturing the skin margins. He reacted well and so remained, save for some weakness. Nevertheless the patient ate very heartily and did excellently until the eighth day. He was then permitted to sit up in a chair, but had not been out of bed more than a few moments when he went into a sudden collapse, from which it proved impossible to arouse him, and death ensued in a very short time. The wound had been dressed, found in perfect condition and the tube removed on the second day. No general post-morten could be obtained, but an examination of the wound after death found it to be in perfectly satisfactory condition, with no evidence whatever of infection or other complication.

Dr. Morton was unable to state definitely, but inclined to the belief that the resident surgeon had not produced an original fracture, but had simply separated the already broken and impacted bone. —Annals of Surgery.

Treatment of Ocular Traumatism.

Trousseau (Gazette Hebdom. de Med. et Chir., June 14, 1896) gives as general rules in injuries of the eye: (1) Render aseptic the eye and conjunctiva. (2) Cover it with a dry aseptic dressing.

The former is best accomplished by free lavage with a warm bichlorid of mercury solution 1-4,000. If free from alcohol and filtered, this solution cannot possibly do any harm. With the patient in a horizontal position, the lids are held apart with one hand while the solution is allowed to trickle into every corner of the eye from a mop of absorbent cotton. When thoroughly cleansed, the eye is covered with a dry, sterile dressing and a starch bandage.

Foreign bodies, if superficial, should be removed under cocain. Wounds of the conjunctiva are to be stitched with the finest catgut or silk. Wounds of the cilary circle are dangerous, and should not be touched.

Small wounds of the sclerotic heal readily; larger ones should be closed by a conjunctival flap. The author speaks against hasty enucleation, meantime watching carefully the other eye for sympathetic ophthalmia.

Traumatic Aneurism of the Posterior Tibia Artery; Notes of a Case.

The following rather interesting case is reported by Dr. C. H. Frazier of Philadelphia in the University Medical Magazine for November:

The patient in question, a lad 11 years of age, came under observation in the out-patient department of the Episcopal Hospital. The history, briefly told, is as follows: Six weeks ago the boy was struck by a brick just behind the internal malleolus of the left foot. With the exception of a minute wound of the integument, there was no evidence of any external injury. Immediately blood flowed in a small jet from the wound, until mechanically checked by the application of some crude dressing. During the six weeks that have elapsed since the accident, a swelling about the size of a walnut has formed at the seat of injury, just behind the internal malleolus. The situation and size of the swelling prevented the wearing of a shoe, on which account chiefly the boy seeks relief.

An examination of the case revealed a swelling of size, shape, and location as above described. To the touch it was of semisolid consistency, and pressure thereon elicted no pain.

A diagnosis of hematoma was made and its removal recommended.

The patient consenting, a free incision exposed the tumor, which proved to be composed of blood-clots inclosed in a sac. On turning out the clots, free hemorrhage ensued. Pressure above the wound, however, promptly and effectually controlled it.

On close inspection it was seen that the hemorrhage had its origin from a tear in the walls of the posterior tibial artery. A catgut ligature was applied on the distal and proximal sides, and the external wound closed with silkworm gut sutures.

At the expiration of a week the stitches were removed, the wound healing by first intention. The subsequent history of the case is uneventful.

Remarks.--From the etiology of the case and from the fact that this aneurism had a sac, it properly belongs to that subdivision, the so-called circumscribed traumatic aneurism. This class is met with chiefly in the scalp, hands and feet. The treatment carried out in this case was that recommended, generally, in cases where the artery injured is small and easy of access, namely, evacuation of clot and application of ligatures on distal and proximal sides of the seat of injury. Left alone, the aneurism may terminate in one of three ways. Either spontaneous cure may occur by extension of the organized clot into the vessel, or, the aneurism enlarging, may burst the sac, thus forming a diffuse traumatic aneurism, or, finally, possible infection with pyogenic microbes may result in the formation of an abscess, the bursting of which may be followed by the discharge of pus, blood-clots, and more or less profuse hemorrhage.

The Employment of Salol in the Treatment of Tuberculosis of the Bones.

The Journal des praticiens for April 4 contains a report of a recent meeting of the Société de chirurgie at which M. Reynier read a paper on this subject. In the presence of limited osseous tuberculosis, he said, which was just beginning, the surgeon often hesitated to interfere by trephining, as there was no exact information in regard to the limits of the field of operation. Grattage was practiced and continued until a more resistant osseous tissue was met with, and the period of time necessary for cicatrization was uncertain; usually it occurred slowly; consequently relapses, fresh abscesses, and persistent fistulæ were to be feared. Even when cicatrization was obtained, he said, the bone might remain large and hypertrophied, and become a cause of restraint in the movements of the limb. If, said M. Reynier, the surgeon was assured of the benignity of the operation, and if it was easy to clearly establish its limits beforehand, intervention should be immediate.

In view of the difficulties attendant upon operations of this nature, M. Reynier employed a method of dressing which had been introduced by him in 1893. This dressing consisted of salol which was liquefied at a temperature of 104 degrees F. and mixed with naphthol, aristol, and iodoform. If, after having trephined the bone and cleansed the tuberculosis region, the cavity was filled with the melted salol, the latter would crystallize at 82 degrees F. and obliterate the cavity entirely. In this way, said M. Reynier, a complete and aseptic occlusion was obtained. Furthermore, union by first intention of the subadjacent skin might be effected with this method of closure, which was similar to plugging of the teeth.

M. Reynier stated that he had operated on six patients and employed this dressing, with the result that he had obtained a rapid recovery in a few days after filling the osseous cavity with this antiseptic mixture, and that immediate union of the skin and the subcutaneous connective tissue had taken place.—N. Y. Med. Journal

The tenth annual meeting of the National Association of Railway Surgeons will meet in Chicago, May 4, 5 and 6, 1897.

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RESECTION OF ARTERIES AND VEINS INJURED IN CONTINUITY; END-TO-END SUTURE; EXPERIMENTAL AND CLINICAL RESEARCH.*

BY J. B. MURPHY, M. D., CHICAGO, ILL.

The idea of suturing an artery after it had been injured was conceived by Lembert and a case is reported by Broca in 1762, in which suture of a longitudinal incision of an artery was successfully made. Assmann in 1773 treated of it in a dissertation at Groningen. The latter made two experiments on animals; both resulted unfavorably through an obliterating endarteritis. He then abandoned the work. Henry Lee of London in 1865 made some experiments with puncture to ascertain how large an opening could be made without fatal hemorrhage and described the method of repair in arteries without suture; Beale made an extensive microscopic examination of Lee's specimens, giving the pathologic histology of repair. (The Transactions of the Medico-Chirurgical Society, Vol. 50, p. 477). In 1883 Gluck reported nineteen experiments with arterial suture, but in all of these cases his efforts were futile, because he was unable to control the hemorrhage from the needle punctures through which the suture was introduced. He also devised aluminum and ivory clamps for the purpose of uniting longitudinal incisions in the vessel and succeeded with the ivory clamp in one experiment on the femoral of a large dog. (Langenbeck's Archives, 1883.) Von Horoch of Vienna had thrombosis in six experiments, including one end-to-end union (1887.) The most extensive and, indeed, the only work of true merit performed in this line was by Dr. Alexander Jassinowsky of Odessa. His first paper was read in Dorpat in 1889; his second was published in Langenbeck's Archives, 1891. Bruci in 1889 sutured six longitudinal incisions in arteries of dogs and was successful in four. Tansini of Modena in 1890 endeavored to close the arteries by absorbable horn clamps. Muscatello successfully sutured a one-third division of the abdominal aorta in a dog. Heidenhain,

* Read at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., on May 1, 1896.

May 28, 1894, closed by catgut suture an opening in the axillary artery, one centimenter long, which was accidentally made while removing adherent carcinomatous glands. The patient made a good recovery and circulation in the extremity was not disturbed. In the same year (1894) Robert Abbe made some very interesting and instructive experiments, placing sterilized glass tubes in vessels with the intention of uniting and re-establishing the circulation. (N. Y. Med. Jour., Jan. 13, 1894.) Von Zoege-Manteuffel in April, 1895, operated on an arterio-venous aneurism in Scarpa's triangle. He wounded the common femoral and made a successful lateral suture of the wall. (Berl. klin Woch. No. 34, 1895.) J. Israel, in discussing Gluck's paper, mentioned that he had closed the common iliac which had been torn for two-thirds of its circumference in an operation for a perityphlitic abscess, by inserting five fine silk sutures through the entire wall of the vessel. (Berlin Cent. für Chir., Dec. 7, 1895.) It does not seem possible from my observations experimentally that two-thirds of the circumference of a vessel the size of the common iliac could be closed with five sutures and have the seam blood-proof. Heidenhain endeavored to accomplish the closure of arterial wounds in the carotid of dogs by suture, but failed. Sabanyeff of Odessa successfully closed a small opening in the femoral artery with suture in 1896. Billroth, Schede, Braun of Koenigsberg, Schmidt and others have successfully sutured wounds in veins, and the closure of wounds in veins by suture is now an accepted surgical procedure. I recently closed an opening three-eighths of an inch in length in the common jugular vein, with five continuous silk stitches. Small openings in veins have frequently been closed with lateral ligature. I cannot find recorded a case in which an artery has been sutured after complete division.

For the purpose of determining whether this were practicable, and whether a considerable portion of the artery could be resected, I have performed the following experiments:

Experiment No. 1, March 4, 1896.—Male dog, weight 40 pounds. An oblique incision dividing one-third of the circumference of the left common carotid was made and closed with a continuous silk suture, penetrating all the coats of the artery; only a small portion of artery was denuded. There was some hemorrhage from needle punctures after the clamps were removed, which subsided rapidly under digital pressure; the wound was closed. The dog showed no unpleasant symptoms after the operation. There was a slight swelling on the left side which lasted about a week.

Post-mortem, March 25, 21 days after operation: There was some newly formed connective tissue at the seat of operation. The sutures were not infected; the caliber of the vessel was only slightly diminished. The silk was covered and could be seen under a thin layer of exudate from the inner side of the vessel. There was no thrombosis. The intima had been fractured by one of the clamps, at which point it was rough and somewhat thickened.

Experiment No. 2, March 4, 1896.—Dog, weight 50 pounds. The right common carotid was exposed and opened by a longitudinal incision one-third of an inch long. The opening was closed by interrupted sutures involving all of the coats. There was some hemorrhage after the clamps were removed, which ceased after a digital pressure of two minutes' duration. The external wound was closed with silkworm gut.

A post-morten was made March 25, 21 days after the operation. There was considerable exudate around the position of the sutures, but the sutures were not infected. The wall of the vessel was thickened on the side of the suture. The lumen of the vessel was diminished one-third; the suture was not exposed in the vessel, but it was covered with a deposit. There was no thrombus. There was some roughening of the intima at the position where the clamps had been placed.

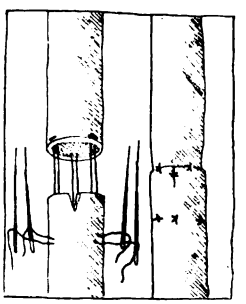

Fig. I (A). (B.)

Fig. I (A) shows method of inserting sutures to produce invagination of artery.

Fig. I (B) shows method of inserting external sutures.

Experiment No. 3, March 7, 1896.—Hunting dog, weight about 50 pounds. The left femoral artery was exposed and an incision one-half an inch long was made in its wall: it was closed with a continuous silk suture; vessel one-eighth inch in diameter. Vessel was clamped with eight-inch Billroth forceps covered with rubber, care being taken not to compress the artery sufficiently to injure the intima. There was no difficulty in producing an accurate approximation of the margins of the wound with silk suture. A very slight hemorrhage took place through the needle holes after the clamps were removed, which ceased in less than a minute. The external wound was closed with silkworm gut suture.

Examination of left femoral March 15, eight days after operation: Union, no hemorrhage, no suppuration, the vessel was completely thrombosed.

Experiment No. 4, same day, same dog.—Invagination of right femoral after complete division. Three double needled silk sutures were used to draw the intussusceptum one-third inch into the intussuscipiens as shown in Fig. I A. Several interrupted sutures bind the end of the intussuscipiens to the circumference of the intussusceptum as shown in Fig. I B.

Examination March 15, eight days after operation: There had been no hemorrhage from the vessel. A slight infection had taken place around the seat of operation. The artery was thrombosed.

Microscopic examination showed the lumen filled with a red thrombus and the wall to consist of two distinct muscular layers, both diffusely infiltrated with round cells. The lumen was very small and the wall very thick.

Experiment No. 5, March 11, 1896.—Dog, weight 60 pounds, large head and neck. Resection of three-fourths of an inch of right common carotid. The proximal end was invaginated with three silk sutures; several sutures penetrating the adventitia and media were used to secure the end of the intussuscipiens to the peripiery of the intussusceptum. The sheath was sewed over the vessel. The adventitia was separated from the media on either end. The Billroth clamp forceps were used to suppress the hemorrhage.

Post-mortem April 15, thirty-five days after operation. Some periarteritis and adhesions existed. The sutures in the skin had suppurated. The area around the vessel was not infected; there was but little contraction at the position of approximation.

Microscopic examination: There was some thickening in the wall. The thickening in the media was more pronounced than in the intima; the process was not progressive. There was nothing to indicate that the artery would not have remained patulous. The wall of the artery showed no evidence of injury by the clamps.

Experiment No. 6, March 11, 1896.—Left common carotid in same dog as in experiment No. 5. Resection of one-half inch of artery. End-to-end suture without invagination. The suture penetrated all the coats; it was continuous and contracted the artery considerably at the line of approximation. It was made with two needles on one thread and a continuous figure-of-eight stitch. There was a little hemorrhage from the needle holes after the sutures were placed. This subsided under a sponge pressure of two minutes' duration. The sheath was not sutured around the vessel. Clamps were the same as used in experiment No. 5.

Post-mortem April 15, thirty-five days after operation: Wound suppurating down to artery. Pocket of pus existed deep in the neck. All of the arterial sutures were exposed in the bottom of the wound. The artery was thrombosed.

Microscopic examination: The artery presented just the opposite condition from its fellow on the left side described above. The intima was very much thickened and was rapidly obliterating the tube. The histology was that of organization of clot; connective tissue cells and blood vessels were taking the place of coagulated blood. The media was likewise somewhat inflamed. There was some inflammation along the lymphatics and adventitia and there were numerous foci of infection. The case was a typical infective endarteritis with formation of coagulum.

Experiment No. 7, March 15, 1896.—Dog, weight 40 pounds. Longitudinal incision in right iliac five-eighths of an inch in length, was closed with a continuous silk suture, including all of the coats of the artery. Five days after the operation a very marked swelling appeared at the position of suture and blood began to ooze from the line of union. The dog was again anæsthetized, cutaneous sutures were removed, margin of wound separated. A decomposed clot about the size of a hen's egg was carefully elevated. There was an absence of union of the wall of the vessel, and when the clot was removed profuse hemorrhage ensued. A ligature was placed above and below the incision in the artery,

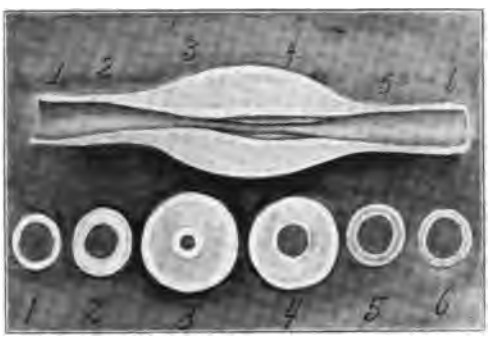

Fig. III. Shows the thickening of wall of artery removed in Experiment No. 9.

and that portion of the vessel excised. The cause of the non-union of the vessel in this case, I believe, was infection. There was no clot in the artery.

Experiment No. 8, March 18, 1896.—Dog, weight 30 pounds. Longitudinal incision one-half inch long was made in the abdominal aorta, which was closed with a continuous silk suture, including all the arterial coats. A slight hemorrhage occurred through needle punctures after clamps were removed, which ceased on one and one-half minutes' digital pressure. No effort was made to cover the line of suture with adventitia or peritoneum.

The dog died March 28. Post-mortem: Retro-peritoneal abscess around artery. Complete occlusion of lumen of artery. General suppurative peritonitis was the cause of death.

Experiment No. 9, March 26, 1896.—Dog, weight 60 pounds. Invagination of left carotid by three double-needled threads attached to the intussusceptum, and interrupted silk suture of the intussuscipiens, involving only the tunica adventitia and media of the proximal side.

Post-mortem April 25, 1896: Left common carotid surrounded by considerable exudate and suppuration around one of the cutaneous stitches. A small sinus led down to one of the sutures at the position of approximation. Vessel wall considerably thickened at the line of union, as shown in Fig. III. The vessel admitted a considerable stream of water through it immediately after its removal. It was somewhat dilated on the proximal side. The collateral branches were enlarged.

Microscopic examination: Most evidence of endarteritis at 3 and 4, Fig. III. Much of the tissue between 2 and 5 seemed accidental. The invaginated walls could be outlined, but the line of demarcation between them was scarcely discernible. The connective tissue around the artery showed a large number of blood vessels and a cross-section of a nerve of considerable size. There was a small amount of inflammation of the vascular and lymph channels at that point. In

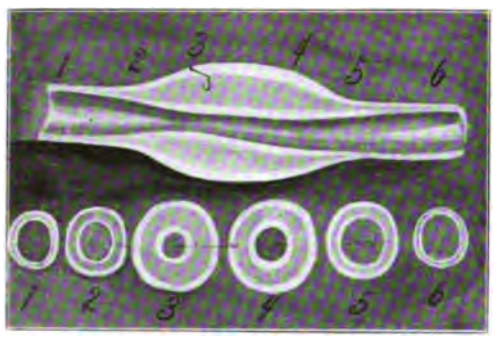

Fig. IV. Shows thickening of artery from end arteritis, from Experiment No. 10.

the adventitia there was a violent acute inflammatory process with foci which resembled those of suppuration. The showing in the media was the same as in the right carotid. In the intima the process was still more violent. The inner elastic lamina was so broken up as to be unrecognizable.

Experiment No. 10.—Same dog as experiment No. 9, same day. Resection of one-half inch of right carotid. Adventitia peeled back. Three double-needled sutures were attached to the intussusceptum and put through the intussuscipiens from within outward, invaginating intussusceptum one-third inch; then sutured the intussuscipiens to the periphery of the intussusceptum, as shown in Fig. I B. The sheath of the artery was sewed around it; the adventitia was not sutured.

Post-mortem on right carotid, April 25, showed no suppuration around the artery; considerable inflammatory exudate; artery enlarged at position of invagination as shown in Fig. 4. Nerve and vein involved in exudate. The vessel admitted a stream of water about one-half its normal diameter. It was enlarged on the proximal side of the union.

Microscopic examination showed marked evidence of endarteritis. Line just below 3, Fig. IV, indicates a suture. At 2 much exudate but less than at 3. At 4 the lumen is about one-half as large as it is at 1 and 5. Lumen at 3 is one-half of what it is at 5. Most of the tissue between 2 and 5 is foreign. There is a moderate amount of inflammation in the adventitia and a large number of new blood vessels. Muscle fibers of the media alternate with bands of small round cells. Capillaries in outer walls are apparent. The region of the intima is the seat of a very marked round celled infiltration; capillaries can be seen in this coat. The thickness of the intima is markedly increased and the lumen is about one-third of the normal size. There are no endothelia lining the intima. Another section of the same specimen presents the same appearance, except what remains of the lumen is a triangular opening. There are sections of nerves in the loose tissue surrounding the vessel.

It will be noticed that notwithstanding the invagination had been made thirty days previous to the post-mortem, there was no clot in the vessel, and the diameter of the lumen was one-third of that above and below the point of union, showing that the endarteritis had progressed slowly.

Experiment No. 11, April 26, 1896.—Calf six weeks old. Excision of one-third inch of left common carotid. Invagination of all coats of proximal into distal end for three-eighths of an inch. The artery was clamped with Billroth forceps. It was found to be elastic and free from tension when replaced. Peripheral sutures were used to secure the invaginated portion as described above. There was little hemorrhage after the operation was completed. The sheath was sewed around the artery. There was a tumor around the area of approximation, with considerable swelling, for three weeks after the operation, which disappeared almost entirely before the specimen was removed for examination.

Specimen secured June 1, 34 days after operation; one and one-half inches of carotid at point of suture was removed and ends ligated. There was considerable inflammatory deposit over the entire field of operation. The union of skin was complete. The collateral vessels around the position of approximation were considerably enlarged. The vessel was not patulous, the lumen being filled by a clot for a considerable space on the distal side of approximation, it extended but one-fourth of an inch on the proximal side.

Microscopic examination showed on the outside a loose layer of connective tissue, the fibers of which did not run in any particular direction. Internal to this was a layer of felted connective tissue interlacing and a very

rich supply of blood vessels, richer than that which is normal in the adventitia. Most of these fibers were of the yellow elastic variety and interlaced in the general trend of the artery. Internal to the adventitia was the tunica media, consisting of muscular fibers, elastic tissue, and a great abundance of inflammatory cells. Internal to this was the inner elastic lamina. Within this there was a zone, which at some of the points of its circumference was composed of mature connective tissue fibers; at others it consisted of a pool of blood. Internal to this was a dense mass of muscle fibers. The fibers of the media were swollen and granular and not in a good state of nutrition. Internal to this was the inner elastic lamina of the invaginated portion of the artery, and the lumen of the tube was filled with a clot. There was some evidence of connective tissue growth in this clot. The union between the artery ends was incomplete.

Experiment No. 12.—Right common carotid of calf, same as used in experiment 11 operated May 3, 1896. Resection of one-half inch of artery united with three invaginating sutures. Three peripheral sutures were made as above; but very little bleeding followed the operation. Sheath was drawn over artery. Clamps used as temporary hæmostatics, as above. The skin was approximated with catgut. There was no swelling nor tumefaction after operation, as on opposite side.

June 1, 1896, one inch of artery at point of union was removed and artery was again sutured (see experiment 13). But little inflammatory deposit was found around the seat of wound. Primary union of skin and subcutaneous tissue had taken place. Some reactive inflammation had taken place around the artery. Water passed freely through the artery when removed.

Microscopic examination: The section showed a mass of granulation older at the periphery than at the center. The inflammation was somewhat nodular; there were some places where it was more intense than at others. In the center there was a small opening in the wall of which there were young embryonal cells, the artery was being obliterated by a general arteritis.

Experiment No. 13, June 1, 1896.—The second experiment on right common carotid of calf. In first experiment of May 3, one-half inch of artery was removed. One June 1 the specimen was removed, taking out one inch at seat of union. The artery was then sutured end-to-end, with interrupted silk suture without invagination. There was some tension on the sutures and the artery was somewhat diminished in size. The left carotid had previously been removed and ends ligated. When clamps were taken off there was no hemorrhage at the line of suture. The calf rallied after the operation and was perfectly well.

Post-mortem, June 5, four days after operation: Primary adhesion of wound; the artery was carefully dissected out; there had been no hemorrhage around the line of union. The vessel was patulous; its lumen was slightly diminished. A small white exudate covered the line of union. The sutures were not exposed in the lumen of the artery, being covered by the exudate. The intima had not been fractured at the point where the clamps were placed.

Experiment No. 14, Aug. 26, 1896.—Brown dog, weight 40 pounds. Median abdominal incision. The abdominal aorta was located just above its iliac bifurcation and exposed for two inches. Billroth clamps were placed in position. A transverse incision was made in the artery for two-fifths of its circumference. It was sutured with kangaroo tendon, involving all the coats. There was

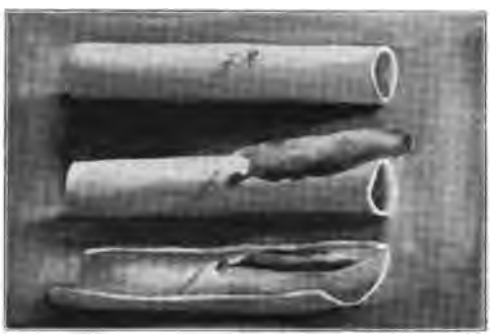

Fig. V. Shows external and internal clot from Experiment No. 14.

some hemorrhage after removal of the clamps. An addition superficial suture was inserted. The retro-abdominal peritoneum was closed over the artery. Abdominal wound was closed with silkworm gut sutures. The dog died three days after operation.

Post-mortem: Abdominal cavity was filled with blood; no peritonitis. An opening was found in the posterior abdominal peritoneum leading to the vessel. The vessel was removed. A clot of considerable size existed in the retro-peritoneal space around the opening of the vessel; this was continuous with a small clot within the vessel shown in gelatine specimen No. 2, Fig. V. The clot on the inner side of the vessel measured three-eighths of an inch in length and one-eighth of an inch in diameter. It was not adherent to the wall of the vessel, but was continuous with the clot from the outside. There was some discoloration of the intima from the upper clamp and a roughening of the surface at that point, but no clot was formed. The lumen of the artery above and below the artery was free.

The kangaroo tendon was softened and would not support its own weight, which accounted for the hemorrhage. On the inner surface of the artery was seen the openings of the small arteries which were free. There was a ragged transverse opening which was gaping widely at the center. The point of adhesion of the clot was without the arterial wall. The remnants of the sutures were seen penetrating the intima. One and one-half centimeters above there was a point of ecchymosis. One centimeter above that a second point of ecchymosis could be seen, the result of the clamps. The ecchymotic patches were transverse in their long diameter and three-fifths centimeter wide. In the one next to the incision there had been rupture of the deep arterial coats, but the intima had been preserved except at one small point; in the other, fracture of the intima and media had taken place. There was no clot at either of these places.

Experiment No. 15.—Black dog, weight 40

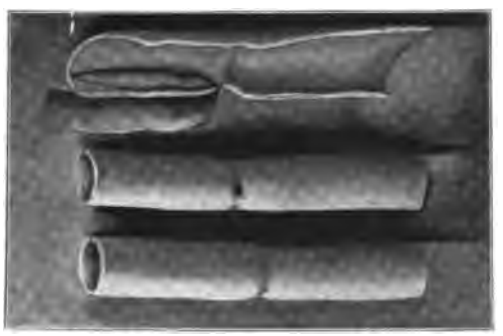

Fig. VI. Shows edge-to-edge union of abdominal aorta showing internal and external clot, from Experiment No. 17.

pounds. Operated, August 26, 1896. Median abdominal incision. Exposure of abdominal aorta two inches above its iliac bifurcation. A longitudinal incision was made in artery one centimeter in length. Sutured with kangaroo tendon taken from same bottle as for experiment 14. Arterial clamps were placed on artery as above. Slight hemorrhage from the wound after the clamps were removed. This was controlled by digital pressure for one minute. Posterior peritoneum was not sutured over artery. A great deal of difficulty was experienced in retaining artery in an elevated position sufficient to admit of suture, as the dog was fat and his abdomen deep. Dog died forty-eight hours after operation.

Post-morten: Abdomen full of blood. Loose large clot existed in retro-peritoneal space. The artery was removed for several inches above and below the clot; its lumen was free. There was no clot on the inner side. The kangaroo tendon was completely disintegrated. Cause of death, hemorrhage.

The general appearance of the artery was normal. Small arteries were seen emerging at different points. The line of incision could be readily recognized. Its edges were roughened and projected about one millimeter into the lumen of the vessel. The ragged incision extended throughout the wall of the artery; in it were seen the remains of the tendon sutur. There was no evidence of regeneration, that is, no reaction process in the walls of the vessel. There was some fibrinous deposit on the roughened edges; no tendency to coagulation on the inner side of the artery. About one centimeter below the line of incision was a small ecchymosis where the intima was roughened and endothelia were absent; there was also a loss of substance showing a fracture of the intima. There was a small fibrous deposit on this area.

Experiment No. 16, September 6, 1896.—Black male dog, weight 70 pounds. Transverse incision dividing one-half of the anterior wall of the abdominal aorta; the openng was closed by a contnuous suture of silk with round needle, involving all the coats of the artery. After the clamps were removed there was bleeding from the angle of the wound; an additional suture was applied without the aid of the clamps. After this was done the bleeding ceased and abdominal wound was closed. Dog died fifty-four hours after operation.

Post-mortem revealed the abdomen full of blood. An examination of the artery showed three-fourths of the line of suture approximated and surrounded by a clot. The last suture which was inserted in the angle of the wound was shown to have included on one side only the tunica adventitia, it did not grasp the median or the intima. This suture gave way and from this point hemorrhage took place. There was no regenerative reaction in the intima around the punctures made by the needle. There was no clot formed on the silk that was exposed in the lumen of the vessel. From the ragged edge at the position of penetration a small clot was adherent and suspended within the artery, but not adherent to the intima; it was continuous with the external clot. This clot was about a centimeter in length and a millimeter in thickness; smooth on its outer edge. The endothelium in the immediate neighborhood was milky white and somewhat roughened.

Experiment No. 17, September 6, 1896.—Black and white female dog, weight 45 pounds. A complete transverse section of abdominal aorta. Continuous silk suture with three needles; edge-to-edge union of artery, Fig. VI. The stitches were closely applied. After the clamps were removed free hemorrhage took place, particularly at one point, where the beginning and end of the sutures met. The clamps were reapplied and one stitch placed at this point. It would have been better if I had made the final stitch overlap the primary stitch, as the artery was contracted when the arterial

pressure was off; while the first and last stitches appeared to be close together then, when the artery dilated they were quite a distance apart. Abdominal wall was closed with silkworm gut.

Dog died September 12. Post-mortem showed silk worm gut to have cut through; absence of organic union over entire length of abdominal incision. An external fistula communicated with the peritoneal cavity. Peritoneal cavity contained a large quantity of pus and some blood. There were many adhesions and a clot of considerable size around iliac vessels. A clot also existed on the right side of the incision behind the iliac vessels. On the inner side of the artery the clot was adherent and sealed over line of union. The clot was not adherent to intima, but adherent to line of union. A slight thin white clot had formed over the point where the temporary hæmostatic forceps were placed during the operation. No manifestations of inflammatory reaction or regeneration in the intima; a small thin clot extended from the point of injury by hæmostatic forceps above down to the line of union. A small flat coagulum extended from the line of union down to the injury of the intima made by the lower hæmostatic forceps. On the outside of the point where the hemorrhage took place the sutures were exposed. An opening one-sixteenth of an inch existed on the anterior surface of the vessel at the line of union communicating with its caliber and partially occluded by a clot. This was the opening through which the fatal hemorrhage occurred. There was excellent union over the line of approximation. There was no clot in either of the iliac vessels. The intima was somewhat roughened over the entire distance between the position of application of both of the forceps. One of the stitches from the point where the hemorrhage occurred had cut through. There was a small perivascular clot around the position of approximation, and blood had burrowed between the tunica intima and media.

Experiment No. 18, Sept. 6, 1896.—Black dog, weight 65 pounds. Complete transverse section of abdominal aorta. Invagination of proximal into distal end with three internal sutures; eight external interrupted sutures were inserted, including all of the coats of the artery in each. When the clamps were removed profuse hemorrhage took place from one point. Clamps were replaced and additional suture inserted; the clamps were again removed, with no escape of blood. Abdominal wound closed with interrupted cutgut sutures. On the sixth day after operation there was some bleeding through abdominal wound.

Dog died on the eighth day. Post-mortem: General suppurative peritonitis; a complete thrombosis of artery had taken place at the site of suture. There was some blood in peritoneal cavity; suppuration around the seat of arterial approximation. Two of the sutures had cut through. A thrombus occupied the vessel for two centimeters above the seat of injury, and two and one-half centimeters below, that is, between the points where the arterial clamps had been placed. The clot was adherent at these points and free in the vessel over the intermediate area.

Microscopic examination: A clot had formed, completely filling the lumen of the vessel. The surface of the clot was filled with round cells and developing connective tissue. The connective tissue developed from the intima in such a manner as to map the clot off into plaques of round cells, mingled with leucotypes and connective tissue cells, surrounded by borders of connective tissue. The intima was markedly thickened, the fibers being separated by bands of young connective tissue cells. The spaces between the fibers filled with cells were broader than the fibers themselves. The same was the case in a lesser degree in the media and adventitia. Union had not progressed very far; it was not firm, tearing apart from slight manipulation. The granulation tissue by which it was held together was in the round cell stage.

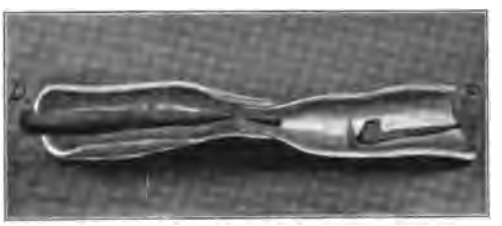

Fig. VII. Shows small clot on proximal side of suture and large on distal, with marked contraction at line of suture, from Experiment No. 17.

Experiment No. 19, October 27, 1896.—Merino sheep; weight 90 pounds. Transverse incision of left common carotid artery. Compression of artery made with strands of gauze. proximal invaginated into distal end in the usual manner. Four needles threaded with silk were used. After compression there was some hemorrhage; as one of the sutures had cut through the wall of the artery another suture was inserted in its place. The artery was very small for invagination.

Sheep died twenty-eight hours after operation from cerebral anemia. See Ex. 20. Post-mortem: In left common carotid artery line of suture was scarcely discernible, covered with a cleavage; a very small cot on proximal side of suture, Fig. VII. There was injury to the intima by the peripheral sutures. Clot on distal side was not adherent except at position of approximation. Clot on proximal side extended beyond the position of division of the artery one-third inch from the point of approx-

imation. The walls of both arteries were firmly adherent. Canal was almost completely occluded by the invaginated portion. Line of union was a little difficult to locate with the naked eye. The caliber of the vessel was so small that the clot at the point of union was about one-sixty-fourth of an inch in diameter.

Experiment No. 20.—Same sheep as in experiment 19. Right common carotid artery; transverse incision; end-to-end invagination. Artery invaginated with four needles threaded with silk. Adventitia was carefully peeled off. At one point hemorrhage took place, but was checked by an additional suture. Sutures were dipped in beeswax before insertion.

Post-mortem: The artery on the right side was thrombosed for thee-eighths of an inch on proximal side and three inches on distal side of the line of suture. The clot was not adherent to the wall of the vessel above or below the line of approximation, showing that it originated at the line of union. There was no hemorrhage between the adventitia and the media where the former overlapped the line of union,

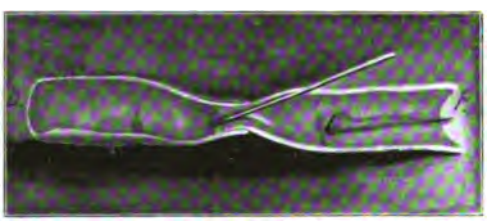

Fig. VIII. Shows marked contraction at line of suture with one stitch transfixing the lumen of the vessel from Exp. 20

showing it was completely sealed. The artery was very much diminished in size where the four invaginated sutures were tied. There was a discoloration and apparently a rupture of the intima at the position where the temporary hæmostatic ligature was placed. A small clot existed on the proximal side of the suture; both layers of both walls were firmly adherent, requiring considerable force to separate them. The agglutination of the walls was very firm. The caliber of the artery was diminished to the size of a knitting needle at the position of invagination, Fig. VIII. The clot formed from the end of the intussusceptum. One of the stitches crossed on the inside of the artery, to which the clot was firmly adherent. There was a slight roughening of the intima where the temporary ligature had been attached, and a small clot one-half of an inch in length formed at that position.

Experiment No. 21, October 29, 1896.—Sheep, weight about 80 pounds. Excision of one-third inch of left common carotid. End-to-end continuous suture of wall of artery which was not invaginated; sutures waxed while wet. Considerable hemorrhage: three additional stitches were inserted. Hemorrhage was controlled by forceps while operating. Adventitia was sutured over line of union; sheath replaced and sutured. Irregular active rhymathic contraction of wall of artery noted after removing aventitia.

Post-morten: November 3, 1896; left common carotid. Clot on distal side occluding artery. Artery was contracted and bent at a right angle. There had been hemorrhage around the line of union; no suppuration. Line of union was difficult to make out. Specimen retained without opening the lumen of vessel.

Experiment No. 22.—Same sheep, on same day as experiment 21. Oblique incision in right common carotid artery one-third inch long was made; continuous silk suture including all coats.

When the adventitia was removed there was a rhythmical contraction of the artery the same as in an intestine when injured. Artery diminished one-third in diameter. No hemorrhage followed the removal of forceps.

Post-morten: November 3, 1896. Right common carotid. Clot extended one inch to the proximal side and one-half inch to the distal side of the line of suture. This was very small; it had formed over the position of suture but was not adherent to the wall of the vessel. It did not completely fill the vessel and extended upward from the line of union to the line of fracture in the intima, where it was again adherent. Over one-half of the length of union the silk was covered so that it could not be seen. The artery had been fractured by the clamp.

Experiment No. 23.—Sheep, operated Oct. 31, 1896. Resection of one-half inch of left common carotid; artery invaginated with four double-needled sutures. The adventitia of the proximal side was torn back; then the proximal was drawn into the distal, bringing the media of the proximal in contact with the intima of the distal. The edge of the intussuscipiens was then approximated with two sutures to the periphery of the intussusceptum. The adventitia of the intussusceptum was then drawn over the line of union and sutured to the periphery of the intussuscipiens, making the order of the coats overlapping each other from within outward: two internal coats of proximal, three coats of distal; adventitia of proximal.

The sheep from this and the following experiment died November 14. Post-mortem of left common carotid: Thrombosis at the position of union and a fracture of artery on the proximal side where the hæmostatic forceps had been placed, but no clot was adherent to it. On the distal side there was also a fracture of the artery with a clot adherent. A thrombus which did not completely fill the artery existed from this point to the line of suture. The two coats were firmly adherent and could not be separated without laceration.

There was a firm connective tissue deposit outside completely covering the line of union so that it could not be recognized. There was no hemorrhage around the seat of union. The greatly diminished size of the artery at the position of invagination was, I believe, the cause of the formation of the clot. Only one suture was exposed outside the exudate, and that was the one used to draw the adventitia over the line of approximation. Specimen given to pathologist for sections.

Experiment No. 24, Oct. 31, 1896.—Same sheep as in experiment 23. Right common carotid artery. A V-shaped incision of one-fourth of an inch on each side was made. It was closed with a continuous suture of six stitches involving all coats of the artery. The sheep had been very sick for two days before death, showing all symptoms of sepsis.

Post-mortem, November 14, 14 days after operation: All of the tissues of the neck were infected. There was an absence of union in a portion of the skin and a most offensive discharge of pus and blood. The tissues of the neck were so much inflamed that their recognition was difficult. A clot the size of a walnut existed on the anterior side of artery at the line of suture. A thrombus filled the proximal side for a half inch from the opening in the vessel. The opening had increased to three-fourths of an inch in length on the anterior surface of the vessel, showing that there had been an elongation of the opening by a necrosis of the wall of the vessel at the line of suture. The clot had a very offensive odor; pus surrounded the wall of the artery. The distal end of the artery was closed by a thrombus up to the head. This specimen shows the destructive effect of infection in arterial suture better than any of the former ones. The cause of death was sepsis.

Experiment No. 25, Nov. 2, 1896.—Sheep, weight about 70 pounds. Resection of one-fourth inch of right carotid artery; invaginated; continuous external suture. Artery was very small; adventitia not removed; silk had been boiled in a saturated solution of oxalate of ammonium and waxed. Sheath closed over artery with a few catgut sutures.

Post-mortem, Nov. 30, 1896: There was no clot on proximal side of suture, nor infection at point of suture. A white organized thrombus existed, filling the vessel. The exact line of union could not be seen when the thrombus was removed. Thrombus extended for one-half inch on the distal side of the line of suture. Specimen was given to Dr. Evans for examination. Union of ends of artery from a macroscopic standpoint was perfect. See Fig. X.

Experiment No. 26, Nov. 2, 1896.—Same sheep as in experiment 25. Transverse incision of one-half the circumference of the right jugular vein. Opening closed with a continuous silk suture which was oxalated and waxed. The wall of the vein was very thin and required considerable care to prevent its laceration with the suture. It was diminished considerable in size by the suture.

Post-mortem Nov. 30, 1896: Peri-phlebitis existed at the site of suture. There was no thrombus in the vein. The diameter of the vein at the point of suture was about one-third of its diameter above and below. A white exudate covered the line of suture.

Experiment No. 27, Nov. 2, 1896.—Same sheep as in experiment 25. Complete division of left jugular vein; edge-to-edge union with continuous oxalated waxed silk suture. Wall of vein was very thin. The continuous suture contracted the vessel to about one-half its normal size. There was but little bleeding after the digital pressure which had been used for hæmostasis was removed.

Post-mortem Nov. 30, 1896: Periphlebitis of slight degree existed; no œdema nor evidence of infection; when the vein was opened

Fig. IX. Showing clot filling vessel and contraction of vessel at line of suture.

it was found that there was a complet occlusion by adhesion at the line of suture. There was not the slightest thrombus on either the distal or proximal side of the suture. The thickening from the exudate at the line of suture was scarcely perceptible. The vessel appeared to have retained its normal diameter on the proximal and distal side of suture.

Experiment No. 28.—Sheep, Nov. 3, 1896. Resection of one-third inch of left common carotid was made. End-to-end approximation of artery with continuous oxalated waxed silk suture. The was considerable hemorrhage from artery when clamps were removed, which ceased with slight pressure. Adventitia was not removed.

Post-mortem Nov. 30, 1896: The diameter of the artery above and below the point of approximation was one-eighth of an inch. The artery was thrombosed for one inch on distal side and three-fourths of an inch on proximal side of suture. The sutures were infected; the lumen of the artery was entirely obliterated.

Experiment No. 29, Nov. 3, 1896.—Same sheep as in experiment 28. A semi-lunar piece one-half inch long involving one-half the circumference of the left jugular vein, was excised. The opening was closed with a con-

tinuous oxalated waxed silk suture; but very little bleeding after pressure hæmostatics were removed.

Post-mortem Nov. 30, 1896: A thickened inflammatory cord existed at site of suture. There was some œdema of the surrounding tissue; about one-fourth of the lumen of the vein was patulous. A white exudate covered the sutures within the lumen of the vessel. There was no thrombus.

Experiment No. 30, Nov. 8, 1896.—Black dog, weight about 40 pounds. A transverse division through all coats of one-third circumference of the abdominal aorta one inch above its bifurcation was made. A continuous silk suture of seven stitches was inserted, including all of the coats of the artery. Silk had been boiled in a saturated solution of oxalate of ammonia. The adventitia was peeled off the artery. The suturing was done with a full curved sharp needle with cutting edges. The needle was inserted so closely that three of the openings cut into one; some bleeding took place from this point when the clamps were removed. Two additional stitches were required. The abdomen was closed with two rows of continuous catgut sutures.

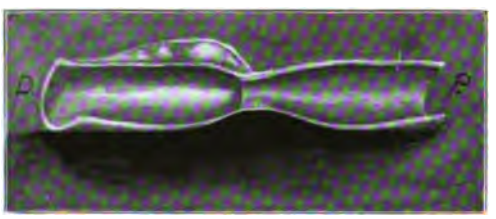

Fig. X. Showing the perfect union of the vessel after removal of the thrombus in Exp. 25.

Dog killed Dec. 5, 1896, 27 days after operation. The abdominal wound was entirely closed. The dog had increased much in weight; there was no peritonitis; a slight elevation of connective tissue on the anterior surface of the artery at the site of suture was noted; the artery was divided, it was very slightly contracted in size at the line of suture. The silk was covered over by a thin white fibrous exudate. There was a slight depression of the surface at the site of union. The arterial wall was perfectly healthy above and below, showing none of the effects of the compression clamps. From a macroscopic point of view the greatest support given the artery was from the connective tissue on the outer wall. Specimen was given to pathologist for examination. This specimen illustrates beautifully the process of repair when the field is kept aseptic.

Experiment No. 31, Nov. 8, 1896.—Black hunting dog, weight 35 pounds. Left common carotid; a longitudinal incision two centimeters long was made. It was closed with a waxed silk suture which had been boiled in a saturated solution of oxalate of ammonium, and included all the coats of the artery. The technique of the operation was the same as in the other experiments. Seven stitches were inserted in the artery; no hemorrhage after hæmostatics were removed.

Post-mortem November 24: A small clot was found one-third the caliber of the artery, not adherent to it except at point of infection. A pocket of pus one-fourth of an inch in diameter existed around the point of suture, showing that the stitches had been infected. On the proximal side of the suture the clot filled the vessel for one-fourth of an inch and was adherent; a small free clot existed for three-fourths of an inch on the distal side.

Experiment No. 32, Nov. 8, 1896.—Dog same as in experiment 31. Both carotids were exposed by an incision deep in the neck. A longitudinal incision one and one-half centimeters long was made in the right common carotid. It was closed with a continuous waxed oxalated silk suture, including all of the coats of the artery. There was no hemorrhage when the hæmostatics were removed. The incision was closed with a continuous suture of catgut.

Post-mortem November 24: Dog died evening of November 23. A sinus leading from the external opening was traced down to the opening in the vessel. The clot around the vessel had suppurated and the sutures had cut through the vessel. There was no thrombus within the lumen. A small white clot was adherent close to the margin of the wound; there was no effort at definitive union. Cause of death, hemorrhage.

Experiment No. 33, Nov. 10, 1896.—Calf eight months old. A resection of one-third inch of right common carotid was made. Invagination by three internal sutures and seven external sutures. The artery was the size of the common femoral in man; no blood escaped; sheath around artery was sutured with catgut; no drain. The invaginating sutures in this case were inserted differently from those of any of the preceding experiments. They included only the adventitia and media of the invaginated portion, and when tied were not exposed in the lumen of the artery in any place, Fig. XI. By this method the size of the artery was not diminished in the same degree as it had been in any previous experiment. It can be seen that by this method there was no foreign body left in the lumen of the artery, as had been done in the previous method of invagination, and therefore there is less likelihood of thrombosis. The peripheral sutures included only the media and adventitia. Temporary hæmostasis was produced by a fine strand of gauze tied firmly around the artery. Specimen removed December 5. Primary union of the external wound had taken place; an extensive induration two and one-half

inches in length by one and one-half inch in diameter was found at the site of approximation This mass was carefully dissected out and the artery was found patulous at each end, although considerably diminished in size. On opening the mass it was found to be a pus pocket about three-fourths of an inch in diameter. In the center was found the necrotic ends of the artery and the sutures. The infection had occurred at the suture. The vessel was thrombosed for one-third of an inch on either side of the abscess. The ends of the artery in which the sutures were inserted were well preserved, though the vessel had been amputated by the inflammatory action on either side of the abscess. The thrombi were very firmly adherent to the intima.

Experiment No. 34, Nov. 14, 1896.—Large black calf about eight months old. A transverse division of right common carotid was made; and end-to-end union by invagination; kangaroo tendon furnished by Dr. Longyear of Detroit was used. Three invaginating and six external sutures were inserted, as in experiment 32. No escape of blood after removal of clamps. Adventitia was peeled off and returned over the line of suture. Fascia and sheath were sutured over the artery. A strand of gauze was tied around the artery to produce temporary hæmostasis. The vessel was a little larger than the common femoral in man. Pulsation was normal on the distal side of the approximation immediately after operation.

Specimen removed December 5. There was no induration or inflammatory action around the site of approximation. Some connective tissue formation outside of the adventitia was found. There was but one suture exposed within the luminia of the vessel, and that for a very small space. When the vessel was opened a thrombus existed on the proximal side of the line of union for one-half an inch, completely occluding the vessel. This was firmly adherent for the first half of that space; over the line of union and for one-fourth inch on the distal side the thrombus was not adherent; again it was adherent for one-fourth inch, occluding the vessel. It should be noted that the points of adhesion and formation of the thrombus were where the temporary ligatures were placed during the operation, showing that the injury done the artery by the ligature was the cause of the thrombus. The union between the two walls of the artery was firm. The kangaroo tendon appeared to be as hard and firm as when it was inserted.

For convenience in treating the subject, arterial and venous suture, we will consider: (1) The pathologic histology of repair of blood vessels. (2) The class of arteries and veins amenable to suture. (3) The degree of destruction that may exist and still leave the vessels within the range of repair by suture. (4) The technique of vessel suture, and (5) the prognosis of arterial and venous suture.

PATHOLOGIC HISTOLOGY OF REPAIR OF ARTERIES AND VEINS.

That the clinical aspect of the subject may be better appreciated, let us first consider the histology and physiology of the vessels and blood.

STRUCTURE AND PROPERTIES OF ARTERIES AND VEINS.

The arteries and veins of the body are the channels through which the blood is carried to and from the tissues and organs. The thin-walled capillaries bring the blood into intimate relation with the cells by transudation and migration.

The arteries are distinguished from the veins by their thicker walls due to the greater development of smooth muscular and elastic tissue. The middle coat of the artery is especially thick, while the outer coat is relatively thin.

The arteries consist of three coats, and are derivatives of the mesoblast. The tunica intima or inner coat consists of a layer of irregular or oblong fusiform nucleated squamous cells forming the excessively thin transparent endothelial coat immediately in contact with the blood stream. These cells have oval nuclei and the long axis of the nucleus and cell is parallel with the long axis of the artery. The endothelial cells have no distinct blood supply, still they have the power of reproduction, and are possessed of marked potential reactive properties when disturbed mechanically or chemically. This was appreciated first by Jones, who showed in his experiments that it was necessary to injure the intima on account of its regenerative properties to produce successful ligation of the arteries. These endothelial cells are held together by a cement substance. Outside of these lie a very thin, more or less fibrous layer sub-epithelial in which numerous spindle or branch-shaped protoplasmic cells lie embedded, with a corresponding system of plasma canals. Outside of this is an elastic lamina. In arteries of medium size it is a fenestrated membrane, while in the largest arteries there may be several elastic lamina, or fenestrated membranes mixed with connective tissue. In middle-sized arteries and in larger arteries a few non-striped muscular fibers are disposed longitudinally between the elastic plates or laminæ along with the circular muscular fibers of the middle coat. They may act so as to narrow the artery, but they may also aid in keeping the lumen of the vessel open and of uniform caliber. It is not

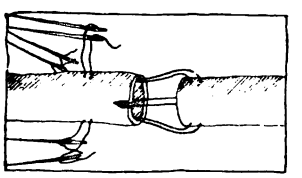

Fig. XI. Shows method of inserting suture so that it is not exposed in lumen of the vessel, described in Exp. 33.

probable that when they act by themselves they dilate the vessels. The nourishment of the intima is entirely independent of the media and adventitia. Its nutriment is received directly from the blood within the artery.

The tunica media, middle coat, or muscularis contains much non-striped muscle, which in the smaller arteries consists of transversely disposed non-striped muscular fibers lying between the endothelium and the adventitia, while a finely granular tissue with a few elastic fibers form the bond of union between them. As we proceed from the very small to the larger arteries the number of muscular fibers becomes so great as to form a well marked fibrous ring of non-striped muscle in which there is comparatively little connective tissue. In the large arteries the amount of connective tissue is considerably increased, and between the layers of connective tissue numerous thick fibers or fenestrated laminæ are concentrically arranged. From a clinical standpoint it can be seen that this coat is composed of histological elements which have very little, if any, power of regeneration. Repair of injury to these elements is accomplished by the formation of new connective tissue. Balance and Edmunds claim that the vasa vasorum penetrate this coat. It is certain from the experiments of Bruci (Pisa, 1893), that the media receives its nutriment from the adventitia either by vessels or nutrient canals, as he demonstrated that a necrosis of the media took place when the adventitia was removed and prevented from readhering by wrapping gutta percha around the vessel; but the intima was not affected by this procedure except to show evidence of increased proliferation. When the adventitia is torn off and immediately replaced the aleration of the muscularis is scarcely discernible.

Fig. XII. Shows small opening originally made in the artery and the large aneurismal sac resulting.

The tunica adventitia or outer coat in the smallest arteries consists of a structureless membrane with a few connective tissue corpuscles attached to it. In the somewhat larger arteries there is a layer of fine fibrous elastic tissue mixed with bundles of fibrillated connective tissue. In the arteries of medium size and in the largest arteries the chief mass consists of bundles of fibrillar connective tissue containing connective tissue corpuscles. The bundles cross each other in various directions and fat cells often lie between them next the media; this accounts for the loose adhesion of the two coats and also for the ease with which the adventitia may be peeled off from the media. There are numerous fenestrated and fibrous elastic laminæ. In the medium-sized and small arteries the elastic tissue next the media takes the form of an independent elastic membrane. It contains blood vessels to the wall, the vasa vasorum, which are supplied from the nearest branch and not from the main trunk of the artery; these vessels usually extend to the media, never to the endothelial cells. It also contains nerves, the small axis cylinders extending through all the coats to the endothelial cells and intercellular substance.

The veins have the same anatomical construction, except that the wall is thinner on account of the smaller amount of non-striped muscle and elastic tissue; there is no noticeable primary contraction of the veins when injured, as there is in the arteries. They are more extensile under the same strain. The adventitia is usually the thickest coat.

The large blood vessels are therefore cylindrical tubes composed of several layers of tissue, more especially elastic tissue and plain muscular fibers. One of the important properties is contractility of the vascular wall, by virtue of which the blood vessels may be elongated or shortened, the diameter of the vessel may be dilated or contracted and the supply of blood to a part altered; this contractility plays no small part in the surgery of the vessels. Their elasticty is great, that is, they offer little resistance within certain limits to any force employed to distend or elongate them; if the force be uniform the blood vessels rapidly regain their original size and form, after the force distending them is removed.

The extent to which the arteries may be stretched has not been accurately estimated. Veins may be stretched 50 per cent without passing the limit of their elasticity, i. e., when a vein is freed from its adhesions to surrounding tissue 50 per cent of the distance may be removed and still the vein possess sufficient elasticty to be approximated. From personal observation I have found that a large portion of carotid arteries could be removed and the ends approximated without difficulty. The internal pressure which a vessel will withstand is very much greater than the normal arterial pressure to which it is subjected, showing that in the process of surgical repair a wall much more feeble than the normal wall of the vessel is sufficient to hold the blood in control. Volkmann found the carotid of a sheep would rupture only when fourteen times the normal pressure was put upon it. The carotid of a dog withstood fifty times the normal blood pressure. The jugular vein about one-half of this (Greheut and Quinquand). It may be deduced from the above that there is little danger of aneurisms at the point of union, even if the walls are somewhat weaker than normal.

THROMBOSIS AND COAGULATION.

Blood in direct contact with living unaltered blood vessels does not coagulate (Hewson, Brücke). Coagulation takes place within an injured blood vessel after death of the leucocytes. The action of the paraglobulin on the fibrinogen in solution in the plasma produces coagulation, if salts of calcium be present. Paraglobulin is believed to be the product of disintegration of cellular elements of blood, principally leucocytes and blood plates. Peptones injected into the blood of a dog do not permit of the interaction of lecithin, and thereby prevents coagulation (Wooldridge.) Freund believes that the death of the red blood corpuscle causes conditions which produce coagulation. He showed that blood collected in glass vessels smeared with vaseline did not coagulate for a long time if decomposition were prevented. Experiments further show that apparently unimportant changes in the condition of the vessel wall may cause coagulation; this result is confirmed by the observations by many pathologists. "All observers are agreed," writes Thoma, "that the solution of the red blood corpuscle causes coagulation, although they differ as to the explanation." It is probable that the splitting of the fibrinogen molecule is produced by the nucleo-proteid and the thrombosin thus formed combines with the calcium; fibrin is a salt of calcium. Albertoni observed that if tryptic pancrease ferment or histon be injected into the blood of an animal, the blood would not coagulate. The three factors necessary for coagulation are fibrinogen, nucleo-proteid in considerable quantity and calcium salts. The coagulation is favored by contact with foreign substances of all kinds, but only when it adheres to them. Blood does not readily coagulate in contact with bodies covered with fat or vaseline. Waxed sutures prepared in oxalate of ammonium should, therefore, be used where the intima of an artery is penetrated. We have been taught that a roughening or irregularity in the wall of an artery would produce coagulation thrombosis. My observations on arteries lead me to believe that this statement is erroneous and that thrombosis occurs only when a foreign body is left in the artery to which the blood adheres, or where an infection is present with the foreign body, causing the death of cellular elements of the blood. The theory that injuries to the intima, per se, do not produce thrombosis, is supported by Porta's observations that thrombosis of the artery was absent in fourteen per cent of the ligations made by him where the intima was injured, and Schumann found, experimentally, that thrombosis occurred in a very much smaller percentage of cases. Senn observed that a clot was not formed on the proximal side of ligatures in veins but always on the distal side. These show that trauma of the ligature, in itself, does not produce coagulation in the vessel.

As a proof that an irregularity in the wall of an artery does not produce thrombosis, we have the clinical fact that arteries penetrated by bullets rarely ever thrombose. They almost always form dissecting aneurisms and there is no tendency to coagulation within the vessel at the seat of the injury nor below that point, if sufficient of the wall remains to guide the current of blood into the distal portion. In case II of this paper, notwithstanding that the artery had been completely penetrated by the bullet, leaving the irregular edges of the arterial coat projecting into the lumen of the vessel, there was not the slightest tendency to the formation of a clot within the vessel nor on the ragged edges of the wall. This observation is supported by the clinical course of traumatic aneurisms and numerous cases may be cited to support this theory, that the roughened edges do not produce coagulation. There is no

Fig. XIII. Shows small canal between artery and vein in arterio-venous aneurism with marked dilatation of vein (Treves).

doubt that even a considerable destruction of the intima does not always cause thrombosis and that his process is lessened if the caliber of the vessel is reduced to certain limits in accordance to Thomas' histo-mechanical principle. Virchow, O. Weber, Paget and Billroth believed that after ligation of the artery, its permanent obliteration is produced by thrombosis and vascularization of the thrombus, and that tissue proliferation within it proceeds from the white blood corpuscles. Rokitansky showed that primary adhesion and definitive occlusion can take place independent of thrombosis. Senn verified this by his experiment. Kocher in 1869 proved that a ligature with primary adhesion of the endothelium would produce closure of an artery. This was further sustained by Lister, Baumgarten, Raube and others. Waldeyer sustained, the belief that the endothelium and subendothelial layer take an active part in producing adhesion of the wall of the vessel after ligation, that the intima receives its blood supply from the capillaries of the media, and that organization takes place from the endothelial lining which forms the basis of a new connective tissue.

Scarpa, recognizing that the endothelial coat of the intima is a derivative of the mesoblast, as the other serous surfaces, the peritoneum, pleura, pericardium, dura, etc., attributed to it the same physiological properties of regeneration. Its reaction to irritants is very much less than that of the peritoneum and much more than the dura, being about midway between the two.

The union between the walls of arteries after ligation, takes place more rapidly without the formation of thrombus; that is, a thrombus is a foreign body and retards organic union in arterial approximation, whether with ligature with intent of definitive occlusion or with suture with the purpose of definitive union of the walls. The former was well recognized by Baumgarten. The endothelial cells increase in number, producing long spindle cells and broad embryonal connective tissue cells from beneath them, (Raab). If vessel walls the same as peritoneal surfaces be brought in close approximation after irritation, they adhere primarily through cell proliferation from the intima by the process of budding of endothelial cells and division of connective tissue cells. The remaining coats of the vessels assist in the definitive organization and vascularization of these adhesions, that is, the media is penetrated by vessels from the adventitia, and capillary loops are formed and joined until organic union is complete.

Fig. XIV. Shows communicating canal between artery and vein in arterio-venous aneurism (Treves).

The subsequent changes in the thrombus are divided into five classes: (1) Hyaline-granular transformation. (2) Organization or replacement by connective tissue and re-establishment of the caliber of the vessel. (3) Calcification. (4) Simple softening. (5) Puriform liquefaction. After an artery has been thrombosed, the thrombus may entirely disappear and continuity of the canal be established. Its absorption is produced by the endothelia of the vessel covering the thrombus and the formation of connective tissue cells. This gradually produces contraction of the thrombus, as shown in Figs. 195, 196 and 197, page 206, Thoma. Vessels from the vasa propria finally penetrate the intima and media of the vessel; absorption takes place, leaving the vessel patulous and its wall free (Thoma-Heuking).

ISCHÆMIA, COLLATERAL CIRCULATION.

If the trunk of a large vessel be sutured and thrombosis takes place at the seat of union, with complete occlusion of the vessel, the life of the part on the distal side will be jeopardized by the interruption in the circulation in proportion to the rapidity with which the circulation is shut off, and the rapidity of the establishment of the collateral circulation which plays an important part in retaining vitality, and which requires time for its development. Permament occlusion of an artery leads, as a general rule, to a permanent alteration and re-arrangement of the vascular system and generally to the development of collateral circulation, (Thoma). After ligation of the main artery of an extremity there is at first a disappearance of pulsation in all the branches. This will remain absent until such time as the circulation is re-established directly through the vessel or by enlargement and development of collateral branches. This can take place with great rapidity after ligation of a large trunk, as of the popliteal and femoral; the return of pulsation in the large vessels below can occur as early as twenty-four hours in the young, and proportionately later in older persons. The veins play an important role in the re-establishment of this collateral circulation, so that where the viens and artery are both occluded, the danger of death to the extremity is much greater than when only one of them is occluded. Upon ligation of large arteries, corresponding to the first and second divisions, the vessel on the proximal and distal sides of the ligature contracts within five to ten minutes after it is tied, and remains permanently contracted, showing that the diameter of the artery is independent of the blood pressure (Thoma.) When a blood vessel is diminished in size, the tension on the wall at that point decreases. On the basis of this histo-mechanical principle, the invaginating method of the union of arteries diminishes the caliber of the vessel at the position of union, and therefore the tension diminishes, while the blood current at that point increases in rapidity. The resisting power of the wall at the point of invagination is above normal as the arterial coats are doubled at that point. From a mechanical standpoint the danger of rupture, dilatation or thrombosis is lessened where the approximation has been made as the diameter of the vessel at that point is smaller and the current more rapid. Experience shows that the gradual occlusion of a vessel always leads to the development of an increased collateral circulation; even the thoracic aorta comes under this rule. After suture of vessels there is a tendency to endarteritis obliterans. As this process is one of slow formation it is one of minor importance as to the ultimate result of arterial suture. While the endarteritis is occluding the vessel, collateral circulation is being established and the danger of death of the part obviated.

THE EFFECT OF LIGATURE OF LARGE VESSELS.

The abdominal aorta has been ligated ten times, one patient survived ten days after the operation. The common iliac has been ligated 68 times (Sidell), with only 16 recoveries, a mortality of 76.5 per cent. In 31 cases of ligation of the femoral artery for aneurisms, hemorrhage occurred in 18, i. e., 60 per cent, and was fatal in 12, or 40 per cent (Balance and Edmunds), a mortality somewhat less than that of ligation of the common iliac, which is 67 per cent. Kammerer collected 28 cases of ligation of the femoral vein; gangrene occurred in two; 22 cases of ligation of femoral vein and artery; gangrene followed in 12; in 178 cases of ligation of the artery alone, gangrene occurred in 25. (N. Y. Med. Jour., May 10, 1891.) Billroth in 1871 and 1872 found that he had secondary hemorrhage from 50 per cent of large vessels ligated in continuity. Of 106 cases of aneurism of the common carotid collected by Wyeth with ligation on the proximal side of the aneurism, 67 recovered, a mortality of 35 per cent. In ligation for aneurism of the external carotid collected by the same author, there were 17 recoveries and 5 deaths, a mortality of 22 per cent. For aneurisms of the common carotid alone, the death rate was 44 per cent. Lipp collected 130 ligations of the external carotid; only two died as a result of the ligation, and these from extension thrombosis. In ligations of the internal carotid 13 to 18 per cent succumbed to brain lesions (Fenger, Lyons, 1894).

The necessity of suturing arteries and veins depends upon their individual importance to the tissue on the injured part of the distal side, that is, we are called upon to suture arteries and veins only in cases where by their obliteration there would probably be a necrosis or impairment of the vitality of the tissue supplied by them, to such an extent that its normal functions would not be performed. Therefore, in the upper extremities, we will not be concerned with the arteries below the brachial; in the neck, not above the common carotid; in the abdomen we are concerned with injuries to the aorta, renal, splenic, hepatic and iliac vessels. The greatest need for arterial suture exists after injury to the so-called terminal arteries, but they are the least accessible.

THE EXTENT OF ARTERIAL RESECTION.

I found that more than one inch of a calf's carotid could be removed and the ends could still be successfully invaginated with sutures. The vessels are very elastic and when separated from surrounding tissues can be stretched to quite an extent. In dogs three-fourths of an inch could readily be removed and the vessel approximated and sutured. I believe the endarteritis in some of my experiments was caused by the stretching of the vessels and by denuding them of their connective tissue to such a large extent in order to elevate them. In many cases three inches of a vessel was freed from all connection before the hæmostatic forceps were applied. From my observations I cannot believe that a vessel could be repaired with safety where more than three-fourths of an inch is removed, except possibly in the popliteal space, Scarpa's triangle or in the axillary space where the position of the limb can be made to relieve the tension of the vessel.

THE TECHNIQUE OF ARTERIAL SUTURE.

The technique of arterial suture. For convenience I will divide these experiments on the arteries into four classes: (1) Longitudinal incision; (2) transverse or irregular wounds involving not more than one-third of the circumference of the artery; (3) transverse sutures involving more than one-half of the circumference of the artery; (4) complete division and resection of the artery, not exceeding three-fourths of an inch.

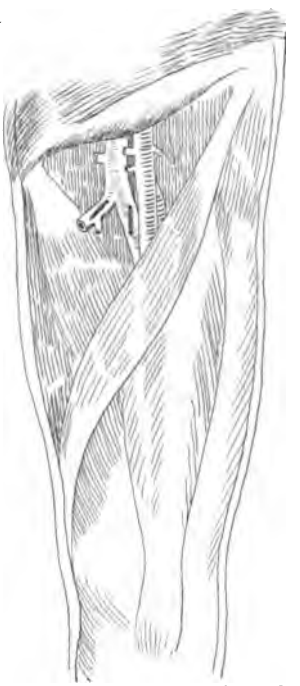

Fig. XV. Shows position of wound in veins in Case I.

The points to be considered in the technique are: (1) Complete asepsis; (2) exposure of the vessel with as little injury as possible; (3) temporary suppression of the blood current; (4) control of the vessel while applying the suture; (5) accurate approximation of the walls; (6) perfect hæmostasis by pressure after the clamps are taken off, and (7) toilet of the wound.

The arterial wall and its endothelium are products of the mesoblast the same as the peritoneum, and react excessively to irritation, but much more slowly than the peritoneum. Infection must be assiduously avoided, as we have not only the regenerative action of the vessel walls interrupted, but also the action of the cellular elements of the blood forming a thrombus in their effort to prevent the admission and advancement of sepsis in the vessel. If we have a suppuration outside the wall of the vessel, we may have a penetration of the infection to the inner wall and a thrombosis, failure of union from infection, or necrosis of

the vessel when it is exposed to the action of the pus germs, as shown in case I.

The vessel wall should be thoroughly exposed and the field prepared. The loose connective tissue should be freed with scissors and dissecting forceps for the required distance above and below the site of operation. If the operation be for a dissecting aneurism it is well to expose the vessel above and below the tumor, so as to control the hemorrhage, then open the aneurismal sac, remove the clot, expose the injured wall of the vessel, freshen the edges of the wound and suture.

CONTROL OF HEMORRHAGE DURING OPERATION.

Control of hemorrhage during the operation. I find this is best accomplished by a delicate eight-inch Billroth forceps, with a broad blade and graduated catch. The blades are first covered with a rubber drainage tube to prevent them from injuring the vessel; the forceps are closed just sufficiently to control the hemorrhage and hold the vessel in the

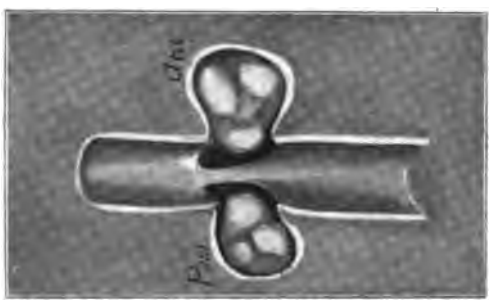

Fig. XVI. Shows the aneurismal pockets on anterior and posterior surface of femoral artery

correct position for approximation. If these forceps are not at hand a heavy twisted silk ligature may be used for the purpose; it must not be tied so firmly as to fracture the intima and is best secured with a loop-knot so as to be readily removed when the operation is completed.

THE CONTROL OF VESSEL WHILE APPLYING THE SUTURE.

The control of the vessel while applying the suture. The best instrument to use is the small rat-tooth catch forceps used by oculists, known as the fixation forceps. The intima should never be clasped with the forceps. The ordinary hæmostatic forceps should not be used in any place on the vessel, as it fractures the coats. The adventitia is sufficiently strong to control the vessel during the operation, and is all that is necessary to be included in the fixation forceps.

Accurate approximation of the edges of the wound may be accomplished with needles and suture material. The former should be the same as are used by ophthalmologists and known as the full-curved sharp and round conjunctiva needles. The straight "floss needles," sizes 6 or 10, are very serviceable in experiments on the limbs or neck where the artery can be thoroughly exposed. The ordinary cambric needle, may, however, be used, or better, a fine cambric needle with an elongated eye. The suture material which I found most serviceable in my experiments was twisted silk. The needle and silk should correspond in size, so that the opening made by the former may be filled by the latter. Effort should be made in suturing lateral openings to have the suture enter only the tunica adventitia and media, the tunica intima being avoided as advised by Jassinowsky. The sutures should be inserted every one-sixteenth or one-twentieth of an inch; they should be interrupted, should enter the vessel one-sixteenth of an inch from the margin of the wound, and not include the tunica intima. The reason for not penetrating the intima is not the danger of hemorrhage but of the endarteritis and obliterating thrombosis that might follow.

The ordinary double knot should be used, not too firmly tied. Where the wound is transverse or irregular, care should be exercised in inserting the needle in parts that belong directly in opposition to each other. If one-half or a greater division of the artery be incised, the first suture should be inserted in the middle of the incision, then one at each angle.

After the sutures are all inserted, the compression forceps should be removed from the distal side first. If there should be hemorrhage from the needle punctures, a compression with the fingers or sponge for from one to three minutes will be sufficient to control it, as a small thrombus forms in each puncture. Where it is possible after the approximation is completed it is advisable to suture the sheath of the vessel, muscle or fascia over the line of union to give it additional support. The field of operation should be thoroughly cleansed after the operation is complete, and a gauze drain inserted. In bullet wounds the bullet should be located and removed, as it might be a source of infection. An accurate approximation should then be made of all tissues with buried catgut suture. The drain should be removed in forty-eight hours.

Jassinowsky's experiments were confined to incised and irregular wounds, involving not more than one-half the circumference of the vessel. I found that when more than half the vessel was destroyed, it was not advisable to suture the edges end-to-end, but to make a resection of the injured portion of the vessel and produce an end-to-end union by invagination. The sutures are inserted as shown in Fig. 11; two or three double-needled threads are prepared and inserted into the end of the proximal portion, including only the two outer coats; these are reinserted at regular intervals one-third to one-half inches above the end into

the distal part from within outwards; the threads are then tied and this invaginates the artery. In order to facilitate the invagination a small incision is made parallel to its long axis, extending one-fourth to one-third inch; then four or five interrupted sutures are inserted into the intussuscipiens binding it to the surface of the intussusceptum, the suture in the latter, entering only the tunica adventitia and media. By this method we have secured a large surface contact of vessel, the proximal portion of the vessel being inserted into the distal. The arterial blood pressure tends to press the walls closer, thus preventing hemorrhage and favoring definitive union, By this method of approximation fewer sutures are necessary to secure blood-proof apposition. In experiments it is important to use large-sized vessels as the lumen of small ones is apt to be filled by a thrombus. The work is delicate; the vessels must be handled with all possible care, as every injury to the intima means inflammatory reaction for repair. The veins may be subjected to the same treatment with better results.

The indications for operation are:

1. Injuries to large vessels in operation.
2. Injuries to large vessels from stab, puncture, bullet or lacerating wounds.
3. Traumatic and dissecting aneurisms.
4. Sacculated, fusiform and arterio-venous aneurisms.

In the first class of cases, i. e., injuries to large vessels in operation, the injury to an artery, if less than two-thirds the circumference be involved, should be immediately repaired by suture. If more than two-thirds the circumference be injured, the division should be made complete and the invagination method used for approximation, care being taken that the invaginating sutures do not penetrate the tunica intima of the invaginated portion, that the external sutures do not injure the intima and are first inserted in the invaginated portion parallel to the long axis of he vessel and then inserted in the overlapping end. (See Fig. II.) By this method the circumference of the artery is not diminished as it is when the suture is inserted transversely to the arterial axis. The sheath should be carefully sutured over the artery, as it gives additional support, and if the general field of operation should suppurate the line of union would thus be protected from infection. The field of operation should always be temporarily drained, as a blood clot prevents primary adhesions. Where the edges of the arterial wound are ragged they should be freshened and clean cut before the suture is inserted.

In the second class of cases, i. e., injuries to large vessels from stab, puncture, bullet or lacerating wounds, the primary hemorrhage as a rule is not excessive, particularly when caused by bullet wounds, except when the abdominal aorta or renal vessels are involved, as the tissues are irregularly torn and overlap each other in such a manner as to prevent the escape of blood and favor the formation of aneurism; therefore, we have ample time to make proper preparation for the suture of the vessel. The wound may have existed for weeks or months with the dissecting aneurism and still be amenable to suture, as the opening in the vessel itself enlarges but little with time, the aneurismal sac being formed from the surrounding tissues and laminated coagula. See Fig. XII. The technique of suture in this class of cases should be the same as in the first, after the aneurismal sac has been enucleated and the opening in the vessel has been exposed and separated from its attachment to the wall of the aneurism.

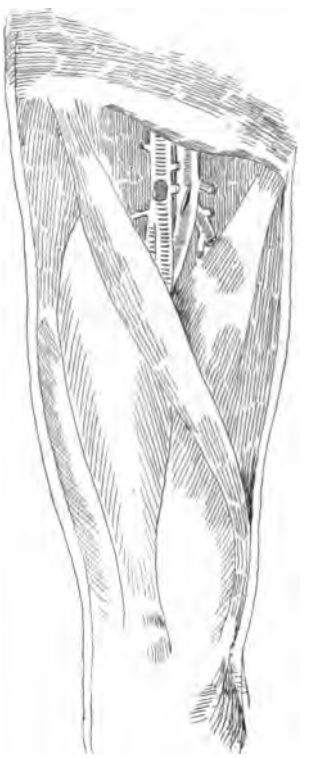

Fig. XVII. Shows position of perforation of artery and vein in Case II.

In the third class of cases, i. e., traumatic aneurisms of long standing, we have the best variety of cases for arterial suture. The opening in the artery is usually small, the arterial wall is healthy and a sufficient quantity of aneurismal stump may be retained to produce a firm line of approximation. See Fig. XII. From a theoretical standpoint as well as from the result of experiments there is no danger of the formation of aneurism at the point of primary suture for injuries, and should not be for secondary suture as in aneurisms of this class. The vessel should be exposed above and below the aneurism, and temporary hæmostasis obtained by a very mild compression forceps. The aneurismal sac should then be freely opened and dissected down to the position of the opening in the artery. The edges of the opening should be freshened and closed, observing the same technique as in primary suture.

In the fourth class of cases, i. e., sacculated, fusiform and arterio-venous aneurisms, the aneurismal sac should be exposed and dissected down to the position of the healthy coats of the artery, Figs. XIII and XIV, where

it should be amputated, leaving sufficient of the aneurismal coat and arterial wall to admit of a row of sutures involving one-sixteenth of an inch of the margin on either side so that when the suture is complete the size of the vessel will be below its normal caliber. This lessens the arterial tension of the vessel at that point and there should follow a union of the walls. Care should be taken not to produce an approximation of arterial surfaces covered with coagulated laminæ. A study of the aneurismal varix, Figs. XIII and XIV (Treves Surgery, p. 634), shows how the aneurismal sac may be amputated or removed from the opening in the artery and the communicating canal closed by suture, also Warren's case (Boston Medical and Surgical Journal, May 30, 1890). The same can be said of Roland's case (Bryant's Surgery, p. 316). As the longitudinal suture of arteries has been so successful experimentally, little doubt remains but it

Fig. XVIII. Shows the extent of destruction of artery and the portion resected, with appearance after end-to-end approximation in Case II.

can be more successful clinically as asepsis and antisepsis can be more effectualiy carried out.

Following are reports of two cases in the human subject:

Case I: Carl A. B., American, age 33, married, a salesman, received a bullet wound in the left Scarpa's triangle (22 caliber ball), at 2 o'clock in the afternoon of October 4. He was taken to the County Hospital, where I saw him, through invitation of Dr. Craig, at 6:45 the same evening. The man had profuse hemorrhage from the wound before he was brought to the hospital. There was considerable puffing for four inches below Poupart's ligament; there was no pulsation nor bruit in this swelling. The left posterior tibial artery pulsated synchronously with the right and was of the same force and tension. It was believed from these conditions, from the position of the wound and the severity of the hemorrhage that the femoral artery was not injured, but that the vein was probably punctured.

Operation: An incision five inches long was made, extending downward from Poupart's ligament parallel with the femoral artery; the internal saphenous vein was exposed and found to be perforated. An opening existed on its anterior and posterior surfaces, the bullet having passed through the middle. These were sutured with a continuous silk suture No. 8 floss needle. The dissection was continued and the common femoral vein exposed and found injured. The femoral vein had an opening on its anterior surface three-fourths of an inch above the junction of the profunda, and on its posterior surface one-eighth of an inch above the vena profunda femoralis, Fig. XV. It was difficult to control the hemorrhage as the blood returned through the vena profunda when the clamps were placed upon the femoral vein above and below the wound. It was soon found that the posterior opening could not be exposed without dividing the profunda. A double ligature was placed on the profunda and it was divided between. The posterior surface of the vein was now turned forward and the opening closed with a continuous suture as above. After this was completed the clamps were removed and a little blood escaped from the posterior inferior angle of the wound in the vein; after the insertion of an additional suture in the angle the hemorrhage ceased. The femoral artery had a fragment of tissue torn off the side of its sheath, but the vessel wall was not injured. The bullet was not located. The vein wall was split by the bullet, no part of it being carried away, the usual result of a bullet wound of a vein. There was not a drop of blood escaping from either of the veins when the compresses were finally removed. The field of operation was sponged out with a per cent solution of carbolic acid, the wound closed and the leg elevated. No drainage.

The greatest difficulty in the operation was experienced in exposing the posterior surface of the common femoral vein on account of the close relation of the wound to the vena profunda. The patient's temperature began to rise after the operation, and on October 8 had reached 104 degrees F. The wound was opened and a gauze drain inserted. The temperature gradually dropped and by October 12 was below 100 degrees F., and remained below 100 degrees F. until November 6, when it reached 101 F.; November 7, in the morning, 102.2 degrees F. The wound had been suppurating all the time, although the external opening was almost closed. On the morning of November 7 there was considerable hemorrhage, which was believed to be due to suppuration of the sutures in the vein. On November 8 temperature 102 degrees, pulse 130; more bleeding; November 9, pulse 144; temperature 100; patient was coughing and expectorating a bloody mucous. On November 10 I saw the patient for the first time in a week; his temperature was then 101.6 degrees and his pulse 104. Examination revealed

a large swelling of the upper third of the thigh, the tension of the tumor was very great; blood was oozing from the small opening which still remained, and a dark clot could be seen inside the opening. There was no pulsation in the swelling. It was not auscultated. Patient was anæsthetized, the opening enlarged, a clot four inches in diameter was shelled out, and in the bottom, bright arterial blood flowed per-saltum into the wound; digital compression controlled it until the field was entirely cleared. The inner side of the femoral artery for one inch was eroded and had a number of perforations. It was carefully dissected out, about one and one-half inches resected, a single ligature placed on the distal and a double one on the proximal end. The cavity was cleansed and drained. The femoral vein could not be located. Some fragments of the femur which had been broken off by the bullet were removed.

November 27: From that time the patient has been doing very well. There has been no disturbance of the circulation of the leg, and the cavity is almost closed; December 8 there is a very small sinus remaining; patient is in excellent condition. The infection was probably produced by the bullet and the continued suppuration favored by the fragments of bone. January 4 patient completely recovered; no œdema and no disturbance of circulation of limb.

Case II: H. V., Italian, peddler, age 29. Shot at 11 o'clock September 19. Was brought to the hospital two hours later. The case was transferred to my service through kindness of Dr. F. S. Hartmann.

Clinical history: The patient was shot twice, one bullet passing into the abdominal wall just above the great curvature of the stomach without penetrating the abdomen; the other entered Scarpa's triangle below Poupart's ligament. There was no bruit at this point nor increased pulsation noticed at the time the patient was admitted to the hospital. I saw the patient first October 4; examination revealed a loud bruit; it could be heard with the ear placed six inches from the thigh. There was no tumor and but slight increase in pulsation. The pulsation in the popliteal, dorsalis-pedis and posterior tibial arteries was scarcely perceptible. I examined the case again on October 6 and demonstrated it to a class of students. A thrill could be felt and a bruit could be heard and the latter was the loudest to which I had ever listened. The pulsation though very feeble could now be felt in the dorsalis-pedis, but not in the posterior tibial.

Diagnosis: Penetrating wound of the common femoral artery about one and one-half inches below Poupart's ligament. It was decided to cut down and expose the artery, and if a penetrating wound of more than one-half of the circumference was found to make a resection and unite it end to end. Operation Oct. 7, 1896. An incision five inches long was made from Poupart's ligament along the course of the femoral artery. The artery was readily exposed about one inch below Poupart's ligament; it was separated from its sheath and a provisional ligature thrown around it but not tied. A careful dissection was then made down along the wall of the vessel to the pulsating clot. The artery was exposed one inch below that point and a ligature thrown around it but not tied; a careful dissection was made upward to the point of the clot. The artery was then closed above and below with gentle compression clamps and was elevated, at which time there was profuse hemorrhage from an opening in the vein. A cavity about the size of a filbert was found posterior to the artery, communicating with its caliber, the aneurismal pocket. A small aneurismal sac about the same size was found on the anterior surface of the artery over the point of perforation, Fig. XVI. The hemorrhage from the vein was very profuse and was controlled by digital compression. It was found that one-eighth of an inch of the arterial wall on the outer side of the opening remained, and on the inner side of the perforation only a band of one-sixteenth of an inch of the adventitia was intact, Fig. XVI and Fig. XVIII. The bullet had passed through the center of the artery, carried away all its wall except the strands described above, and passed downward and backward, making a large hole in the vein in its posterior and external side just above the junction of the vena profunda, Fig. XVII. Great difficulty was experienced in controlling the hemorrhage from the vein. After dissecting the vein above and below the point of laceration and placing a temporary ligature on the vena profunda, the hemorrhage was controlled so that the vein could be sutured. At the point of suture the vein was greatly diminished in size, but when the clamps were removed it dilated about one-third the normal diameter, or one-third the diameter of the vein above and below. There was no bleeding from the vein when the clamps were removed. Our attention was then turned to the artery. Two inches of it had been exposed and freed from all surroundings. The opening in the artery was three-eighths of an inch in length; one-half inch was resected and the proximal end was invaginated into the distal for one-third of an inch with four double-needled threads which penetrated all the walls of the artery.

The adventitia was peeled off the invaginated portion for a distance of one-third inch; a row of sutures was placed around the edge of the overlapping distal end, the sutures penetrating only the media of the proximal portion; the adventitia

was then drawn over the line of union and sutured. The clamps were removed. Not a drop of blood escaped at the line of suture. Pulsation was immediately restored in the artery below the line of approximation, and it could be felt feebly in the posterior tibial and dorsalis-pedis. The sheath and connective tissue around the artery were then approximated at the position of suture with catgut so as to support the wall of the artery. The whole cavity was washed out with a 5 per cent solution of carbolic acid, and the edges of the wound accurately approximated with silkworm gut sutures. No drainage.

The time for the operation was approximately two and one-half hours, most of that time being consumed in suturing the vein. The artery was easily secured and sutured, and the hemorrhage from it readily controlled. The patient was placed in bed, leg elevated and wrapped in cotton.

A pulsation could be felt in the dorsalis-pedis on October 11, four days after the operation. There was no œdema of the leg and no pain. The circulation was good continuously from the time of operation. The wound suppurated; drainage was inserted, but at no time did the patient's temperature exceed 100.8 degrees Fahrenheit. Dec. 8, 1896, the circulation is perfect, the wound has healed with the exception of a small superficial ulcer one-third of an inch in diameter. The patient has not had an unpleasant symptom since the operation.

January 4: Patient is walking about the hospital, has no œdema and no disturbance of circulation.

I desire to thank Dr. W. A. Evans for the microscopical work, and Dr. E. H. Lee for his assistance in the experiments.

34 Washington street.

Extensive Surgery to the Skull, With Recovery.

By T. L. Armitage, M. D., Lilly, Cambria County, PA.

G. Short, aged five years and five months, was carried into my office on the evening of the sixth of May, having about sixteen minutes previously been struck by a railroad engine. She was completely unconscious when I saw her. Upon superficial examination I found a very extensive fracture extending across the skull from ear to ear, with a wound running from the left ear to crown. Her hair was shaved and an incision made, continuous with the wound, downward, outward and forward, extending one and a half inches in front of the external auditory meatus; this flap was raised, when a piece of bone two and one-half inches long, three-fourths inch wide, was found crushed into the brain. The dura and brain was bulging round it, but the dura was still intact. This piece of bone was extracted, when the dura immediately bulged out of wound, appeared tumified. It was incised in four separate places, each incision being a quarter of an inch in length, an iodoform gauze drain was placed in the wound and flap adjusted with about six stitches. No anæsthetic was used, the child being still unconscious. After being dressed she received a hypodermic injection of half a grain of sulphate of strychnine, when her parents carried her home. Four hours afterward she was again given ten minims of liquor strychninæ hypodermically, and that line of treatment carried on three times a day for six days. The bowels were moved by large enemata of water every morning, and shortly after evacuation, a nutrient enemata, containing one tablespoonful of brandy, one whipped egg, and a half pint of milk was thrown into the bowel, and repeated noon and evening for four days, when the bowel would no longer retain it. Upon the fifth day, oral feeling was begun, but had to be watched very carefully, as she strangled when a full teaspoonful of milk was put into her mouth. Her right arm and leg was completely paralyzed, and her eyelids closed. About the twelfth day cornstarch and whipped egg was added to the milk, and a cold bath was given from this time forward daily. The wound was dressed every day for two weeks. About the middle of the third week a piece of bone sloughed out, one-half inch long and one-half inch wide; after this it was only dressed once or twice weekyl until healed.

In presenting this case to the profession at large, it is with two objects in view, viz.: The intense amount of shock recovered from, together with the extensive destruction of bone and concomitant fracture; and, secondly, the large quantity of strychnine employed as a remedial agent. Her first dose after extraction of bone was half a grain hypodermically, and it was continued for four days, until the physiological effect was obtained, when it was discontinued for three days and then resumed. In all, inside of two weeks, she had taken six grains of strychnine. It was four days before an attempt was made to feed her orally; she remained eighteen days without opening her eyes; twenty days from the injury she began to talk, and then only very imperfectly (exactly in the same manner as case of gunshot wound of head reported in the Medical Standard last year); about seventy-two days before an attempt was made at walking, and the gait was very peculiar, just like a child learning—she held to a chair for some time. Now, August 17, she can talk, walk and run just as before injury, whilst bone is forming in the vacant space.—Medical Standard.

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The tenth annual meeting of the National Association of Railway Surgeons will be held in Chicago, May 4, 5 and 6, 1897.

All who were present at the ninth annual meeting of the National Association of Railway Surgeons at St. Louis will recall the brilliant remarks made by the president, Dr. J. B. Murphy, upon the subject of the suture of veins and arteries, injured in their continuity, and the discussion which followed. Although Dr. Murphy used no notes, he had in his pocket the manuscript of a paper which has since been much amplified and which fills the better part of the present issue of The Railway Surgeon. Since the St. Louis meeting many additional experiments have been performed, the results of which are now given, and Dr. Murphy has had additional clinical experience fully confirming his conclusions. This seems to us now to be the most important paper which has been published in the columns of The Railway Surgeon, and we believe that it will mark an epoch in traumatic surgery. Only those who have done similar experimental work can form any idea of the time and labor which the author has given to the preparation of this magnificent paper.

We recall vividly the speech which Dr. Murphy made at the close of the Chicago meeting of the National Association of Railway Surgeons, in accepting the presidency of the association for 1896 and the earnest appeal which he made for original research by our members. What a splendid example he set for us. There is more work to be done; there are new paths to be found. May we not hope that the publication of this paper will furnish a new stimulus to railway surgeons to do more and better work and to let their fellows know of it?

The editors of The Railway Surgeon are gratified to notice an increased interest on the part of the members of the National Association of Railway Surgeons, in both the association and its official journal. We shall be glad to hear from our readers whenever they have anything to communicate that will advance the interests of either. The members can, if they will, add a great deal to the usefulness of the journal by advising us of any incidents in their practice that embrace novel or interesting features. Regrettable as it may be, railway accidents are constantly occurring and there is scarcely an accident that does not reveal some features that if properly illustrated and described in the columns of The Railway Surgeon would be of great value to our readers. We earnestly urge the members of the National Association to bear this constantly in mind.

A Good Local Anæsthetic.

A good local anæsthetic for spraying abscesses before lancing is made with half a drachm of chloroform in an ounce of ether.—The Medical Summary.

Dr. G. W. H. Kemper of Muncie, Ind., has been appointed local surgeon at Muncie for the Big Four, in place of Dr. H. M. Winans, who resigned some time since. Dr. Kemper continues as surgeon at the same point for the L. E. & W. railway.

Notes of Societies.

Association of Military Surgeons of the United States.

The following are the officers of this association for 1896-97: President, Com. Albert L. Gihon, Medical Director, U. S. N. (retired), New York City; first vice-president, Brig.-Gen. Edward J. Forster, Surgeon-General, M. V. M. (deceased), Boston, Mass.; second vice-president, Maj. John Van Rensselaer Hoff, Surgeon, U. S. A., Fort Vancouver, Wash.; secretary, Maj. Herman Burgin, Surgeon, P. N. G., Philadelphia, Pa.; treasurer, Capt. Jas. J. Erwin, Surgeon, O. N. G., Cleveland, O.; editor, Maj. Charles C. Foster, Surgeon, M. V. M., Cambridge, Mass. The seventh annual meeting of the association will be held at Columbus, O., May 25, 26 and 27, 1897. The local committee of arrangements consists of Maj. Henry M. W. Moore, chairman, Assistant Surgeon, O. N. G., Columbus, O.; Capt. James E. Pilcher, secretary, Assistant Surgeon, U. S. A., Columbus Barracks, Columbus, O.

Western Ophthalmological, Otological, Laryngological and Rhinological Association.

This society meets in St. Louis, Mo., first Thursday and Friday, April, 1897. Physicians desiring to read papers are urged to send subject to secretary soon. Programmes will be mailed February 1, the profession cordially invited to attend. The Railway Association will give one and one-third fare on the usual certificate plan. Hal Foster, secretary, Kansas City, Mo.

The tenth annual meeting of the National Association of Railway Surgeons will be held in Chicago, May 4, 5 and 6, 1897.

The Treatment of Burns.

Kelly (New York Polyclinic) describes his method of treating burns. He regards the inefficient results obtained so often as due to the non-recognition of asepsis in the management of this class of cases. Indeed, he would make asepsis the fundamental principle in the therapy of burns. He mentions the dry dressing to condemn it as impracticable, for the reason that asepsis cannot be maintained and that toxic effects are prone to follow. The author's method (for which he claims no originality) is simply a moist dressing, for which he claims the following advantages, namely, that "the materials are all easy of procurement, easily sterilized or impregnated with antiseptics, if required, and are easy of application." Furthermore, the dressing is more efficient in controlling or at least mitigating sepsis, is comfortable to the patient when applied, and its removal is absolutely painless. Asepsis is preferable to antisepsis. Shock is met by using morphia hypodermically. The wound is first irrigated with sterile water (110 degrees) or Thiersch's solution if there be no sepsis present, with bichloride solution (1-1,000) where infection has already occurred, to be followed with sterile water when the surface irrigated is large. Unbroken blisters are never ruptured, as the epidermal covering protects the surface beneath from infection. When tense and threatening rupture they are aspirated subcutaneously with a sterile needle. The dressing proper is adjusted to the different degrees of severity; portions simply hyperæmic are anointed with a five per cent solution of phenol in sterile olive oil, which reduces heat and itching when present; strips of gutta percha tissue previously kept in a two per cent carbolic acid solution. This material may be applied over unbroken blisters to protect them from rupture. Over areas where slough is impending a moist gauze compress is applied, covered with rubber tissue to prevent evaporation. Over all a large thick layer of sterile cotton is laid and held in place with a well-fitting bandage.

The author at this juncture emphasizes the necessity for the same scrupulous cleanliness of hands and instruments as in any aseptic operation, and the maintaining of these precautions throughout the conduct of the case. He advises changing the dressings daily during the first week, after which time every second or third day will suffice. As to iodoform, he regards it as useful but dangerous when applied over extensive surfaces. Grafting may be done after the separation of the sloughs. Where deep losses of substance have occurred, plastic operation by flap with pedicle may be best employed. Few cases require much more than a month for their satisfactory completion.—Buffalo Medical Journal.

Professor Roentgen was the recipient, on November 30, of a medal awarded him by the Royal Society of Great Britain, for his discovery of the X-rays.

Extracts and Abstracts.

Successful Abdominal Nephrectomy for Rupture of the Kidney.

At a recent meeting of the Clinical Society of London, Wallis (Lancet, October 31, 1896, p. 1,229) reported the case of a man, twenty-two years old, who had fallen a distance of twelve feet from a ladder upon a spiked railing. Though collapsed and evidently in pain, consciousness was not lost. The abdomen was rigid and rather distended. On examination it was found that one of the spikes—three inches in length—had pierced the abdominal wall nearly an inch below the tenth costal cartilage on the right side. The opening in the skin ran downward and inward, and the finger passed into the wound could be pushed on into the abdominal cavity. Soon after admission to the hospital the patient passed a pint of healthy pure blood by the urethra. He was at once prepared for operation, and an incision made from the lower end of the punctured wound downward to the right semilunar line. A lacerated wound of the peritoneum came into view, through which the bruised intestines presented. The peritoneal wound was enlarged and large masses of blood clot were turned out of the abdomen. Sponges were inserted and the sides of the abdominal wound held apart by two long silk ligatures. The under surfaces of the liver and the gall bladder were exposed and found intact. The intestines in the track of the wound were bruised and one piece of small intestine presented a tear in the external coats, through which the mucosa bulged. At the bottom of the cavity the kidney could be felt, torn almost in two; blood welled up through the wound at a great rate. The left kidney was found intact in its normal situation. The peritoneum was now divided along the outer edge of the ascending colon, and this portion of the gut pushed in toward the middle line. The left hand was passed in behind the colon, the kidney rapidly freed and brought out of the wound. The ureter was clamped, tied and cut, the vessels were treated in the same way, and the kidney was removed. The deep muscles were considerably lacerated and bled freely. Sponges were temporarily inserted and the abdominal cavity was washed out with saline solution. The wound was packed with iodoform gauze in strips and dressed with cyanide gauze, blue wool and bandaged. The patient was greatly collapsed after the operation, but reacted well during the following twenty-four hours. The wound healed without complication, and the ultimate recovery was perfect. For two days following the operation the urine contained blood, and for twelve days albumin. The quantity of urine passed in twenty-four hours averaged between forty and fifty ounces. It was pointed out that in the past rupture of the kidney has been attended with a mortality of thirty-five per cent.—Medical Record.

Subcoracoid Dislocation of the Humerus in a Man 92 Years of Age—Reduction, With Perfect Recovery.

By H. D. Walker, M. D., of Franklinville, N. Y.

The following case is thought worthy of reporting, for two reasons: First, I am unable to find the report of anyone of that age with a dislocation of the humerus; and, second, I failed to reduce by Kocher's method, but easily accomplished reduction by other means. The oldest person I can find recorded with a dislocation of the humerus is eighty-six years of age. Guterbock reports one, both humeri being dislocated in an old lady by falling from her bed,[1] and Dr. H. B. Sands reports another in a lady, also aged eighty-six years.[2]

On December 23, 1894, I was called to see Mr. M. S., ninety-two years old, on the seventh day of the preceding September. While emptying a pail of water he had slipped on a stone covered with ice and fallen heavily, striking on the left shoulder. He was picked up by his friends, carried into the house, and I reached him about half an hour after the accident. I found him sitting in a large rocking-chair supporting his left arm with his right hand. He was very pale, and at intervals would lose consciousness from the pain and his weak condition.

On removing his clothing to the waist and examining him, I noticed that the left arm was abducted from the body about thirty degrees. There was an abrasion of the skin on the left shoulder at the upper posterior and outer part, showing plainly where the force of the fall was received. On placing the hand on the opposite shoulder it was impossible to bring the elbow down to the chest. The acromion process was prominent, and on rotating the arm the head of the humerus could be plainly seen and felt beneath the coracoid. After giving him a glass of hot whisky, I laid him on his back on a lounge, and, with an assistant to hold down the opposite shoulder, proceeded to reduce the dislocation by Kocher's method, as modified by Dr. C. A. Powers.

Four times I faithfully tried to reduce the bone in this way, but failed. In performing the second movement, i. e., rotating the arm outward, so much resistance was met that it was not fully rotated, the patient exclaiming each time that I would break his arm. I did

[1] Medical News, vol. xlvii, page 541.
[2] Medical Record, vol. xix, page 45.

not deem it prudent, in his condition, to give an anæsthetic; moreover, I have always succeeded in reducing a dislocation of the humerus without one. After a short rest, I placed a towel through the axilla and directed an assistant to take hold of the hand and make moderate extension, first, directly downward and forward, then gradually across the body to the right.

While the extension was being made in this way I drew upward and outward on the towel, when the head was felt distinctly as it slipped back into place. This is the first time I have failed to reduce a subcoracoid dislocation by Kocher's method, and it may be well to inquire why I did not succeed. I attribute the failure to a lack of rotating the arm sufficiently outward, being fearful, on account of the age of the patient, the great resistance met, and the cries that I would break his arm, that fracture would actually occur. What was the cause of the uncommon resistance met with on rotating the arm outward? I am of the opinion it was due to degeneration of the muscles and ligaments about the joint, consequent upon old age, so they would not permit full rotation of the arm outward. I notice there are contractions of the palmar fascia in both his hands, also a want of freedom of motion about the right shoulder and the joints generally, such as we usually find in old persons. At the present time, about one and a half years after the injury, I find the arm in as perfect a condition as the right one.—Medical News.

Eucain in Minor Surgery—Report of a Case.

By Arthur L. Fuller, M. D., Houston, Texas.

While cocaine has been of undoubted value in minor surgery, its use having enabled the surgeon to dispense with general anæsthetics in lesser operations, many cases have been reported in which its exhibition, even in very small quantities, has been attended with serious and even fatal results. If these accidents were due to the use of excessive quantities of the drug, they could be guarded against; but they seem to have occurred quite independently of the amount used, and this uncertainty of action has undoubtedly caused many surgeons to employ it less than they otherwise would have done.

It is claimed that in eucain we have a drug which is practically innocuous and which produced a local anæsthesia fully as effective as that of cocaine. While the reports of its use in ophthalmic and dental practice show that it has a very strong claim on our attention, very few reports of its use in general surgery have so far come to hand, and this emboldens me to report a case which is interesting, solely from its employment as an anæsthetic.

Miss J. L., aet. 18, came to me with a large mole on her neck. The mole was so situated as to show above the back of her dress, and caused her much distress on account of its unsightliness. After injecting endermically twenty minims of a ten per cent solution of eucain, I made an elliptical incision through the skin and removed the mole, together with a little surrounding skin. The piece removed was somewhat larger than a quarter dollar. The edges were then brought together with two sutures and a simple dressing applied. On the third day the sutures were removed and the wound covered with collodion. The place is now, eight days after removal, quite healed, only a thin red line marking the site of the operation.

In this case the anæsthesia, which covered an area as large as a half-dollar, was rapidly induced and absolutely perfect, the patient not even knowing when the incisions were being made or the sutures introduced, though the tissues were so hardened by the eucain that it was only with difficulty the needles could be made to pierce it. Such perfect anæsthesia I have never seen induced by endermic injections of cocaine. I observed no bad effects on the circulation, though from the position of the mole there was no means of preventing the whole amount of eucain entering the circulation in a very short time, and there were no bad after-effects, the wound healing well and quickly.

This case has given me a very favorable impression of eucain, and I shall in future almost entirely substitute it for cocaine in my practice, reserving the latter for those cases in which sutures are required, for while eucain seems to be the superior in the thoroughness of the anæsthesia induced, it so hardens the tissue that it is only with the greatest difficulty that sutures can be introduced, a drawback which may possibly be overcome by the use of weaker solutions, if such are found to act as well as the one used in this case.

Since writing the above, my friend, Dr. E. N. Gray, of this city, has described to me a case in which he used eucain. The patient was suffering from a tubercular ulcer, and he wished to scrape away the diseased tissues. He tried painting the surface of the ulcer with a four per cent solution of cocaine, but it had so little effect that the patient could not bear the scraping. Some days later he tried an eight per cent solution of eucain and was able to curette the ulcer freely with no discomfort to the patient. He states that the anæsthesia was perfect, that it was induced more rapidly, extended more deeply and lasted longer than that of cocaine. His experience coincides with mine as regards the hardening of the tissues, and he informs me that the eucain coagulated the pus so that it came away like lumps of cheese.—International Journal of Surgery.

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REMARKS UPON FRACTURES.*

BY SOLON MARKS, M. D., MILWAUKEE, WIS.

I will acknowledge that in an unguarded moment I promised our secretary that I would say something upon fractures. I regret it very much now. The treatment of fractures is as dangerous to a surgeon's reputation as anything connected with the practice of surgery. As you are aware, fractures are often followed by more or less deformity or impairment of functions. You are well aware of that, but unfortunately it is very hard to convince the non-professional that anything like deformity or impairment of motion is not the fault of the surgeon, especially in railroad cases. To illustrate, something like the following came under my observation:

A man was injured on a railroad; he was neither a passenger nor a workman and the railroad company was not in any way at fault. Notwithstanding that the officers of the company, out of sympathy for a poor man, ordered one of the surgeons of the company to take charge of the case and give him every care possible at the expense of the company. It was a compound comminuted fracture of the thigh. Other surgeons were called in who did not belong to the company at all, and they all agreed that it was possible a very imperfect limb might be saved, but it would be more dangerous to leave it than to amputate it at once. They informed the injured man of their conclusion and he settled the matter at once. He said he wouldn't have it amputated; he would die first, no matter what they said. The limb was dressed and month after month the surgeon attended to the case. After nearly six months the man was able to begin to move around on crutches, very much pleased with the attention he had received and perfectly satisfied with the limb. Finally he was able to walk out in the open air. One day while he was out walking he met an old gentleman who claimed he had had great experience in the treatment of wounds and in nursing them. After a while he asked the patient to step in and rest and seemed to take a great interest in him, and finally asked him to show him the leg. The patient was only too willing to show it to anyone taking so much interest in his case and the limb was laid bare. The old gentleman wiped his glasses with great care, took a fresh chew of tobacco and was ready for the inspection. He looked it over with great care, up and down, and finally shook his head and asked the patient if the doctor that "set that there leg thought it was set right." The response was: "As well as could be in the condition in which it was found after the injury."

Again the old man examined the limb and measured it with strings and was horrified to find that it was an inch and a half shorter than the other leg. He changed his quid to the other side of his mouth, raised his spectacles to his forehead, sat back in his chair and said: "That there doctor what set that there leg didn't know anything about his business." He also said that the leg wasn't set right, and if he would call on Dr. Cimicifuga he would agree with him that the leg wasn't set right and could probably set his leg out to the full length. Up to this time the patient was perfectly satisfied, but as he returned home he was somewhat disturbed by what the old gentleman told him, and finally concluded he would go and see Dr. Cimicifuga. As soon as the doctor looked it over he declined to have anything to do with it or to prescribe for it. This disturbed him still more and finally he called on Dr. Ethics, who treated him with great dignity, but told him nothing could be done with it, and that he

* Made at the fourth annual meeting of the C. M. & St. P. Ry. Surgeons' Association, at Chicago, Nov. 13, 1896.

had no right to express an opinion. That disturbed him more and he called on other doctors from time to time. Some wouldn't express any opinion and others told him it was a bad case. He finally concluded he had been treated very badly indeed, and called on a lawyer with a view to prosecuting the doctor. The lawyer inquired into the case and found that the railroad company had employed the surgeon. He thought it would be foolish to prosecute the doctor—he had never collected a cent from any doctor—so he would sue the company for malpractice. The lawyer went around to see the different persons who had expressed an opinion, but wasn't satisfied with the reputation of the men. He was very anxious to get a man with some reputation who would have influence with the court. He then had the patient call on Dr. Old Reliable. He told him what to say and how to act, and said: "That doctor is pretty rough; he may swear at you, but never mind, he won't hurt you." The doctor, however, treated him with kindness, asked him into the consulting room and asked him when he was injured. When he found it was nearly a year before, he discovered the odor of a colored gentleman and saw the fence in the distance. The patient finally asked the doctor if he didn't think it was a bad case of surgery. Then the doctor told him the truth, that considering the nature of the accident it was one of the best cases he had ever seen. The man went back to the lawyer and he changed his course entirely. He commenced writing the officers of the company, asking them for humanity's sake to do something for the poor man who had been crippled for life, and I understand that in that way he got a few dollars, but how much it was the unfortunate man got you can judge for yourselves.

I have no doubt that most of you, who have been connected with the railroad for some time, have seen a great number of cases where you were thoroughly satisfied that the patients have been exaggerating their troubles. I am not prepared to say that this is always intentional, for I can well understand that any person who has been through a railroad wreck would have his nerves shaken up to a considerable extent and be very apt to conscientiously believe he was seriously injured; but we also have a class who are blackmailers and who will attempt to deceive us in every way possible for the sake of getting money out of the railroad company that doesn't belong to them. But we should not, because the majority of them are not quite fair with us, conclude that they are all so, because there are some who are conscientious and tell us the truth in every particular. We find a man sometimes who has been on a wreck in a railroad in a car which is not thrown from the track and nobody in it is injured. He says he is not injured and gets out and helps others out of the wreck and goes home and feels very much pleased to think he was not injured. In the course of eight or ten days he learns that the railroad company is paying some of those who were injured, and he finally concludes that he was among the most severely hurt, and at once informs the company of his deplorable condition.

Now the company must rely upon the surgeon to know or to find out how severely injured he is. And what is the duty of the surgeon toward his company? It seems to me to be very plain. He should guard the company's interest the same as he would guard his own, but while he is doing that he should not forget to be just toward all. There is no way in which he can serve his company better than by being just and truthful. He should observe his case attentively, so that in case he is called upon to testify he can do so intelligently and conscientiously, and if called upon to testify he should try to appear before the judge and jury as an expert who is there for the purpose of telling the truth. I think I have seen surgeons called upon to testify who in their anxiety to favor the company have done the company more harm than good. I think there is a doctor here who will recollect a case where I was called. Quite a number of surgeons were called to testify in the case where there had been a dislocation. The dislocation was reduced and I believe to this day the man had nursed his arm for the purpose of getting money out of the railroad company. He carried it for months in a sling. The judge ordered an examination of the case by both his surgeon and the railroad's. One of the gentlemen that was with me didn't see anything the matter; he didn't see that there was any atrophy around the shoulder. There was quite a good deal of atrophy around the

shoulder, but he said he was all right; there was nothing the matter with him. I whispered to him and told him it was useless to talk that way, not meaning my friend to hear it, but I judge he did hear it and went and told their lawyer. When it came to cross-examine him he asked: "Did you find anything wrong about the shoulder-joint?" "Well, very little." Then the lawyer said: "You didn't see that very little, did you, until Dr. Marks told you?" He also swore that the man didn't suffer any pain. What is the use of swearing to a thing like that? No man can swear whether another man is suffering pain or not. We may think he is shamming and not telling the truth, but I would hate very much to swear that a man was not suffering pain who had his shoulder dislocated.

Regarding the treatment of fracture I am often asked: "How do you treat fractures? What is your rule? What splints do you use?" My answer is, I have no particular splints and follow no particular rule. I believe there is but one rule which is applicable to all cases of fracture, and that is to reduce the fragments and place them in their position as soon as possible, and the surgeon's anatomical knowledge and mechanical ingenuity will suggest the appliances to keep them in position. In my younger days, like most of us, I thought it was necessary for a man who pretended to doctor fractures to have a large number of splints, and I thought it necessary to keep them in a place where everybody could see them to show that I was prepared to treat fractures. In the course of time, when I got a fracture, I was much surprised to find there was not one I could use and had to make a splint out of a shingle. Since that time I have had very little to do with patent splints, because there are no two fractures, it seems to me, exactly alike. We have fractures which are very similar, but if you will examine them closely you will find there is a little difference in them which will need a little change in the treatment in order to hold the bones in position and keep them in the position they ought to be. That is the course I have pursued. I have no rule and I have no splints except those I make myself. I believe the surgeon who follows the books and treats them all alike, and never goes outside of what he finds in the books, will not as a rule have the best success. It seems to me every fracture is a law unto itself, as far as treatment is concerned. I don't believe I have ever treated two fractures exactly alike, and I have had quite a number during the last forty years. But in spite of all we can do we fail sometimes to get the desired result, especially in fractures close to the body, in the femur, just below the trochanter. I have found that fracture the most difficult I ever treated. I remember one such case where, in spite of all I could do, I could not keep the upper fragment down in position with the lower fragment, with any amount of force I could put on. Then I thought I could follow it up with the lower fragment and I pulled it up so hard it seemed as if it would strike his chin, but I couldn't keep it up there. This was an eyesore to me for several years. The man got well, but the bones overlapped in spite of all I could do. I don't know how I could have changed it. I had counsel, but nobody could help me.

A fracture of the wrist joint is another which does not always result as well as we would desire. As you are aware, there are a great many different splints recommended for this and different methods of treating it. Sometimes it comes out very well, but other times it doesn't. There is a difference of opinion regarding the cause of the deformity. What causes it? Dr. Moore, as you are aware, claims that the extremity of the ulna gets entangled in the extensor carpi ulnaris. It seems to me it is due greatly to the conformation of the joint and the action of the very strong muscles below this joint. The tenacity of the muscles forces it up. How do you treat it? Do you always treat it the same? I have always treated it as Hamilton recommends and have had very good results.

I have made it a rule to keep it in the prone position. This I think is the best position it can be in. I examine it every few days. I never leave fractures as some men do. I should not dare to put it in place and go off and leave it. Generally the hand is badly swollen and I can't tell how it is getting along. When it is swollen I can't tell exactly the position of the fragments, and I want to see it every few days and mold it into shape, and if there is any deformity I can force the ends together and straighten them as they should

be. We may have a comminuted fracture which may produce anchylosis and various deformities. But, as I said, I treat every case by itself; every case is a law unto itself.

INJURIES OF JOINTS.*

By Milton Jay, M. D., Chicago, Ill.

The more complicated the structure of any organ or part, and the greater the variety of tissue entering into its make-up, the more serious will be the result of injuries to such organ or part. In considering joint injuries and their treatment and results, it is well to keep in mind their complicated anatomical construction, as well as their extended physiological action, so as to be the better prepared to combat the various pathological processes that may arise; each and every structure entering into the composition of joints is subject to injuries and consequent pathological conditions. The expanded cancellous structure of the ends of the long bones may be the seat of injuries as well as disease, as well as the incrusting cartilage and the capsular ligament, which is well developed in the ball-and-socket joints, these being attached to the bones, and closely connected with the periosteum. The joint cavity, except over the articulating cartilages, is lined by a synovial membrane, which is either a closed sack or communicates with a bursa; it is lax enough to permit of the free movement of the bones upon each other, and is more or less folded or fringed, holding and covering masses of fat. This stricture is extremely liable to injury. Outside the joint are the muscles moving the joint, and the tendons running in sheaths; these are often injured. The muscles and joint structures are innervated by branches of the same nerves; the same blood vessels supply the periarticular structures and the joint proper. So very intimately are all these structures connected that an injury to any one of them may very soon extend to another, and even all of them, so that it is often not an easy matter to determine which particular structure was primarily and originally the seat of the injury. It is not always an easy matter to make a correct and exact diagnosis of joint injuries, particularly is this the case after much time has passed since the reception of the injury. Much will depend upon the nature and condition of the joint at the time the injury is received; should the joint be one that has previously been affected with rheumatism or gout, syphilis, or previous injuries, the conditons may be much aggravated, and the result far less satisfactory, and in many of these cases a satisfactory history is very difficult to obtain.

In our railroad practice, where we have so many joint injuries and complications, we are often left very much in the dark as to the true history of the exact condition of the joint and surrounding structure before the injury was received; and yet the railroad surgeon is held responsible and is expected to produce as good results in an injury of an old chronic diseased joint as if the joint had been in a perfectly healthy condition at the time of the last injury. There is certainly no class of injuries with which the railroad surgeon has to deal that will give him more trouble and anxiety than the various and complicated joint injuries. Often the injury may be very extensive, tearing or lacerating all the structures of the joint, even penetrating into and opening the joint in such a destructive manner that it would seem as though there was no hope of saving the limb, yet under proper treatment the joint and limb are saved. Another case may seem to be much more favorable, the injury slight, the laceration and tearing much less extensive, the joint not penetrated, in fact, the case does not present seemingly any very grave symptoms; yet, with the best of care and the most skillful treatment, the case goes from bad to worse and the patient loses both joint and limb, if not his life, and many times the condition of the parts at the time of the injury has had more to do with the result than we imagined.

In the injuries to the special structures of joints, the synovial membrane is most frequently affected; the membrane becomes congested, chiefly around the edges of the cartilage and in the fringes which, because of their undue vascularity and œdema, are elongated; at times the entire membrane is highly injected, the synoval secretion is increased in amount according to the intensity of the inflammation, but as a rule the inflammation, thus lighted up, does not long remain confined to the synovial membrane, but affects the other parts of the joint. In acute attacks due to trauma, these cases are readly diagnosed, and by a proper treatment are generally soon relieved. Rest is an all-

* Read by title at the ninth annual meeting of the National Association of Railway Surgeons, at St. Louis, Mo., May 1, 1896.

important factor in the treatment; this, with equable pressure as firm as can be comfortably borne, will generally accomplish the desired result, placing the limb in the most comfortable position, and applying a plaster of Paris bandage, including not only the joint, but a portion of the limb on either side of the joint, allowing it to remain at rest for days, or until the fluid has been absorbed, and the inflammatory action ended. In some cases of chronic synovitis, with much distension and extravasation of blood into the joint, where there is danger of the joint structures becoming disorganized, the fluid had better be drawn off; if aspiration is done, every precaution must be taken to prevent sepsis. As a rule, cases of arthritis and periarticular inflammation, owing to the complicated structures affected, will require a longer time for recovery; time in many of these cases is an all-important factor in the treatment. Time and rest will often accomplish more than all other treatments. Nature is the great restorer, and to conform our treatment to harmonize with her laws, is one of the great objects to be attained in all surgical treatment.

The classification of joint injuries and wounds is generally made into penetrating and non-penetrating. Those that are penetrating, opening up the joint structures, are expected to be the more serious in their results, and more difficult of treatment, and yet while this is true as a rule, it is not always the case. Some joint injuries without an external opening are more dangerous and complicated in their nature, and more fatal in results than others that are penetrating. Simply opening into a joint is of itself not necessarily a fatal procedure under strictly antiseptic precautions; indeed, it is often done as a necessary surgical interference to relieve existing pathological conditions of the joint structures.

The joint injury most to be feared and dreaded is where the joint has been crushed; all the joint structure, bony as well as all other tissues composing the joint, have been injured, and this is often the case without a penetrating wound of the joint. Sometimes, indeed, to successfully treat such cases, it becomes necessary to open the joint. A half century ago all such injuries, and particularly wounds penetrating the joint, were considered as calling for immediate amputation; but not so in this day of surgical knowledge and skill. The point which more than any other should be impressed upon every railroad surgeon is this: Never sacrifice a limb until all attempts to save it have failed. I would not underestimate the gravity and anger of penetrating wounds of joints, they are always serious, but only more grave than the non-penetrating in this, there is the additional danger of infection, to which every open wound is subjected. The fate of most of these open wounds depends upon the treatment received at the first dressing. If there has been no septic infection at the time the wound was received, and none at the first dressing, the danger is more than half passed, unless there be laxity or carelessness in the after treatment. The war-cry in the treatment of all wounds now, is prevent sepsis and the battle is won.

By far the most common joint-injury is sprain. This is produced by a sudden wrench or twist of the articulation, and occurs most frequently in the ankle, knee, wrist and elbow. Its degree may vary from that which is so slight that is effects quickly subside, to that which is associated with luxation, or fracture, or both. The line of displacement may pass through any section of the investing capsule, but it most often is through that part in which motion is least. By this abnormal movement the synovial membrane is unfolded on one side and compressed on the other, and when the normal limit of such change is reached, the membrane is torn and crushed. The ligaments, though their fibers cannot stretch do elongate somewhat, but the limit is quickly reached, and further extension produces laceration. Rupture of the vessels and slight or extensive hemorrhage into the joint cavity may occur, as well as injury of the articular structures. Intra-articular extravasation to any considerable amount is indicative of severe injury and adds greatly to the gravity of the case. The symptoms are well marked, the only question, as a rule, being whether or not the case is a simple sprain, or whether there is an existing luxation, or, more often, fracture. Pain is instantly produced and is always severe; should there be much hemorrhage into the periarticular structures, movement of the joint is arrested. Color changes in the skin take place in a short time. Should there be fracture extending into the joint, this may very seriously complicate matters, and greatly add to the liability of ankylosis of the joint.

The prognosis varies with the joint affected,

the extent of damage done and the promptness and efficiency of treatment. The treatment consists in the prevention or the limitation of the inflammation in and about the joint. Should there be extensive hemorrhage into the joint, it should be withdrawn through an aseptic aspirator needle before the dressing is applied. By far the best treatment, as a rule, is immobilization of the joint, by the application of a plaster of Paris bandage. This will give comfort, prevent swelling and rest the joint. In persons suffering from constitutional tuberculosis, syphilis or rheumatism, these favorable results must not be expected.

I have seen two cases during the past year that were peculiar; the tendons overlying the joint were the seat of the injury. One of the men had been subject to rheumatism, though he had not had it for two years. The other had had syphilis some years ago. The first, a robust-looking young man twenty-four years of age, received a severe sprain of the right ankle. Pain was very severe, but there was very little swelling and no effusion into the joint. A plaster of Paris bandage was applied and kept on for a week. The pain was not relieved. The bandage was taken off for a day, and then reapplied, remaining for another week, still there was no relief from pain. There was very little swelling, some rigors, not well marked, but a temperature, two days after the injury, of 101 degrees, and from that to 103 all the time for the two weeks, occasionally reaching 104 degrees, and at one time 105. There was pain and some tenderness on the inner side of the ankle joint, extending up the tendons; not much pain on moving the joint. After twenty days of unsatisfactory treatment, an anæsthetic was administered, and an incision made, extending some two inches below the joint on the inner side to six inches above the joint parallel with the tendons. This incision was carried down to the joint and the joint examined. The joint structures were normal, but the tendon sheaths were discolored, and thickened with granulation tissues; this was scraped or curetted off from the tendons wherever found; the wound was thoroughly cleansed and antiseptically dressed, and placed in a plaster of Paris cast. Not a drop of pus was found in or about the ankle and the wound healed without suppuration. An examination of the scrapings from the tendon sheaths, both by the microscope and by culture, was made, but no bacteria were found. The man made a speedy recovery and now, one year after, has had no trouble.

The other, the syphilitic case, was very similar as to the nature and extent of the injury and the progress and treatment of this case was almost identical with the first, except the temperature, which was at no time more than 103 degrees, and never below 101 degrees for three weeks. The operation was made in the same way and the tendon sheaths were found disorganized. About one dram of pus was obtained; the wound was dressed and treated in the same manner as the case first mentioned and it healed without suppuration. It is now six months since the operation and there has been no trouble. An examination of the pus obtained revealed simply the pus microbe.

Here were two cases of similar injuries, both in location and extent; one in a rheumatic and the other in a syphilitic subject; the progress and treatment was the same, the condition of the parts the same, except that one had progressed farther than the other.

In considering joint injuries, it is well for us to remember, as railroad surgeons, who have so much to do with injuries, how many joint diseases simulate, and in all respects resemble joint injuries. It is an easy matter to class all joint troubles as injuries when often the supposed injury has had but little or nothing to do with the condition of the joint, which depends upon a pre-existing constitutional or local joint affection. Neuralgic pain in a joint may be due to constitutional or to local causes, i. e., to disease of the brain or spinal cord; to neurasthenia, to malaria, to syphilis, to nerve injury, to pressure upon a nerve by a tumor, to affection of organs more or less remote. Like similar pain elsewhere, it is intermittent and variable in intensity, and is unassociated with any apparent permanent change in the articular, or periarticular structures, and yet in every essential particular resembles a joint injury. Hysterical joints may be mistaken for disease of joint injury. More than half a century ago Brodie directed attention to cases of seeming articular disease or injury, in which no joint lesion was present, and which were only manifestations of hysteria. Since then such cases have been found to be of frequent occurrence. The patient imagines he has seri-

ous disease, which causes great local distress and entirely prevents passive motion, except at the cost of much suffering. There is not in these cases much swelling, but great hyperæsthesia of the skin, the least touch causing pain. There may be apparent rigidity of the muscles about the articulation, but this disappears when the patient is anæsthetized.

It is of the highest importance that the true nature of the affection should be determined. These cases are often misunderstood, and the patient is treated for actual articular disease or injury, and in consequence becomes a permanent cripple.

In this connection may be mentioned gonorrheal arthritis or what is frequently called gonorrheal rheumatism. The joint affection, whether characterized by intra-articular effusion, by articular and periarticular exudamatic. Though a patient with gonorrhea may have rheumatism and a rheumatic joint because of such antecedent disease may be more susceptible to the toxic action of the gonococcus, or of the mixed gonorrheal and pyogenic infection, the symptoms vary according to the stage of the disease. In the acute form the suffering is intense, worse at night, and aggravated by movements. The parts are swollen and hot; the skin is red, there is decided elevation of temperature and acceleration of pulse. The accumulation in the joints, in spite of any treatment will often remain unchanged for weeks, or even months. In the treatment of this, as in other forms of arthritis, rest is of great importance. As long as there is any inflammation the joint should be kept immobol-tions, or by the presence of us, is not rheuized. Any existing hydrarthrosis may be aspirated and the joint injected. In rheumatic arthritis the symptoms are those of acute synovitis. Pain, extreme sensitiveness to pressure, and heat and swelling, due in part to effusion into the pariarticular structures, but chiefly into the cavity. Suppuration never occurs unless there has been a mixed infection.

A peculiar osteo-arthritis, known as Charcot's disease, has been frequently observed in patients affected with locomotor ataxia. The joint changes are, in the main, those of osteo-arthritis in general, but there are certain differences of importance. The disease is much more acute and without any injury having been received, the joint suddenly swells, and soon a large intra-articular effusion occurs. There is extensive, and at times very rapid, ulceration, and wearing down of cartilage and bone; new formations are as a rule limited, though an hypertrophic variety is sometimes met with. The lesion often extends along the shaft of the bone and pieces of bone are separated as though there had been a comminuted fracture.

The ligaments quickly break down with resulting great mobility. Dislocation, or characteristic deformity without complete luxation may occur. Everything seems to indicate that the disease is primarily neurotic, depending upon changes that have taken place in the spinal cord.

While these last mentioned diseases are not joint injuries, I have referred to them to show how striking the similarity between many joint diseases and joint injuries is, and how very important it is, in all cases of injury, to know the pre-existing constitutional, as well as local conditions of the individual.

THE NORTHERN PACIFIC HOSPITAL AT BRAINERD, MINN.

In The Railway Surgeon for November 17 we gave a picture of the Northern Pacific hospital at Missoula, Mont., and herewith we give a similar picture of the main hospital at Brainerd, which is in charge of Dr. W. Courtney, chief surgeon of the eastern division.

The annual statement of the Northern Pacific Beneficial association makes a very favorable showing, as follows:

	Year ended June 30, 1896.	Year ended June 30, 1895.	Increase.	Decrease.
Receipts.....	$73,678.66	$70,169.23	$3,509.43	.....
Expenses.....	63,484.73	63,996.38	.....	$511.65
Surplus.....	$10,193.93	$ 6,172.85	$4,021.08	.....

The number of cases treated increased as compared with last year as appears from the following table:

	Year ended June 30, 1896.	Year ended June 30, 1895.	Inc.
Cases treated at Brainerd hospital...	1,395	1,010	385
" " at Missoula hospital...	1,155	1,024	131
" " by line surgeons, E. D.	7,751	7,482	269
" " " " W. D.	5,495	5,129	366
Total.....	15,796	14,645	1,151

The following statement of the average cost of treating patients is interesting:

	Brainerd.	Missoula.
Average cost per patient at hospitals:		
Indoor	$33.68	$36.11
Outdoor and office	3.90	3.94
	East. Div.	West. Div.
Average cost per patient treated by line surgeons	$ 1.86	$ 1.75

HOSPITAL BOARDING.

	Brainerd.	Missoula.
Number of indoor patients boarded	428	370
Number days boarded	10,139	6,613
Average number of days boarded	24	18
Average number of officers and help	22.3	12.1
Total number of days boarded	6,838	4,350
Average number of days boarded	306	359
Cost per patient at hospitals for medical services and medicines	$ 3.90	$ 3.94
Cost per patient at hospital for boarding, nursing and all other items	29.78	32.17
Cost per indoor patient	33.68	36.1

A CASE OF RUPTURE OF THE URETHRA—TREATMENT BY SUTURE.*

By J. F. H. Sugg, M. D., Clinton, Iowa.

On the evening of July 7, 1896, I was summoned to Fulton, Ill., and requested to bring instruments suitable to relieve a distended urinary bladder that could not be reached by the catheter. I was met at Fulton by Doctors Ward and Clendenen, of that place, and Dr. Seger of Morrison, Ill. Dr. Ward gave me the following history of the case:

At 5 o'clock that morning, Mr. M. L., aged 55 years, fell astride the door of his ice house.

THE NORTHERN PACIFIC HOSPITAL AT BRAINERD, MINN.

The board of managers of the association consists of nineteen members—eight being appointed by the railroad company, ten being elected by the members and one being the general manager of the company, ex-officio. The ten managers elected by the members each represent one of the ten following classes: Conductors, brakemen, station employes, engineers, firemen, shopmen, trackmen, bridge and building men, general office force and construction department.

The door was the lower section of an ordinary double door, one inch thick and its top beveled or chisel edged. The fall was a drop of two and a half feet. Though suffering greatly and unable to void his urine, Mr. M. did not call a physician until 10 o'clock—five hours after the accident. When summoned Dr. Ward found the patient suffering intensely. There was some bleeding from the penis, marked swelling of

* Read at the fourth annual meeting of the C., M. & St. P. Ry. Surgeons' Association at Chicago, Ill., Nov. 13, 1896.

the perineum and scrotum and inability to pass urine. The doctor endeavored to relieve the patient by catherization, but after a patient trial of two or three hours did not succeed in introducing the instrument into the bladder. He then called Dr. Clendenen in counsel. The patient's sufferings having become more intense, morphine was given hypodermically, but with only slight relief. The two physicians then united their skill in an effort to coax and wheedle a catheter into the bladder, but their efforts were futile, and at 4 o'clock in the afternoon a conclusion was reached that further effort at instrumentation was not advisable, and an unfavorable prognosis was given to the wife and friends. The wife immediately sent for Dr. Seger of Morrison, who reached the patient about 7 o'clock, and at once summoned me.

At 9 o'clock I found the patient wild with pain. He was in the knee elbow position upon a bed, and several men were upon each side to prevent him doing himself violence. He was promptly chloroformed. The perineum, scrotum and penis were intensely ecchymosed and greatly swollen. The scrotum was fully as large as an average fœtal head. The bladder was enormously distended, and its dimensions were plainly outlined upon the abdominal wall. A sound carefully introduced into the urethra escaped in the deep part of the tube, passing to the left. The sound was withdrawn until its beak was within the urethra, when it was again gently passed toward the bladder and again escaped from the tube, this time passing to the right. No further attempt was made. The patient's surroundings and other circumstances made it desirable that he should be taken to a hospital. I therefore relieved the bladder by super pubic aspiration—withdrawing five pints of normal urine—and ordered the patient removed to Agatha Hospital at Clinton, Ia. He reached the hospital at 1 o'clock a. m., in good condition and passed the remainder of the night with comparatively little pain.

I saw him at 9 o'clock the next morning. His general condition was good. The perineum and scrotum were swollen and would rival in color the best specimens of an African chief. A well marked epididymitis was present on the left side. The patient was placed under ether and the perineum opened by a median incision. Blood clots were removed and all false passages and pockets washed out. The urethra had evidently been divided through the posterior part of the bulb. The anterior end of the divided tube was readily found by the use of the sound, but the posterior end could not be detected. The tissues were soft and infiltrated, the different structures could not be distinguished and the parts being evidently infected no attempt was made to repair the injury. I therefore made a median lithotomy incision without a staff and inserted a drainage tube into the bladder, partially closed the perineal wound by suture, packed with gauze and put my patient to bed. No unfavorable symptoms followed. There was some suppuration from the seat of the urethral laceration; the epididymitis gradually improved and by July 23 all swelling and suppuration had disappeared. The patient was on that day again placed under ether and the extent of his injury explored.

All the structures except the skin and superficial layer of the superficial facia had been divided by the accident down to and including the urethra at the posterior part of the bulb. The posterior end of the urethra was not difficult to find, although separated from the anterior end fully one inch. When the two ends of the divided tube were brought together over a sound, I discovered that a part of the floor of the posterior section had been destroyed, leaving a quadrilateral opening three-fourths of an inch in length, one-fourth inch wide anteriorly, and three-sixteenths of an inch wide posteriorly, and involving the membranous urethra in more than half its length. I also discovered that in making the lithotomy incision my knife had wandered to the left of the median line and had penetrated the prostate just to the left of the urethra and thence had passed into the prostatic portion of the canal—a fortunate circumstance under existing conditions. I now freshened all divided surfaces and divided the remaining portion of the posterior part of the urethra into three equal segments, by two longitudinal incisions extending from its free end backward three-fourhs of an inch—being on a level with the posterior limit of laceration. The incisions were carried through all the urethral coats for the first third of their length, after which their depth gradually lessened and at their posterior limit little more than the mucous membrane was divided. The end of the tube was now spread like a fan, until the distance across the free ends of the three segments

equaled the circumference of the anterior end of the urethra. With interrupted sutures of catgut I fastened the middle segment in its normal position to the anterior end forming the roof of the urethra. The sutures were carried through all the urethral structures and tied within the tube. A soft rubber bougie, No. 16 American, was then passed through the penile urethra and well past the urethral laceration. The remaining two segments were brought round the bougie and united by a catgut suture passed near their upper and inner margin. Each segment was then sutured with catgut to the anterior end of the urethra.

I had now converted the one large quadrilateral opening into three small V-shaped wounds, each three-fourths of an inch in length. The lateral ones each with a base one-eighth of an inch directed anteriorly; the third situated on the urethral floor with a base three-sixteenths of an inch directed posteriorly. The divided structures were now sutured over the urethra with catgut and the external wound closed by silkworm gut—care being taken to have a free opening from the wound in the urethral floor to the external cutaneous surface, in which a small gauze drain was placed. The perineal tube was again secured in the bladder and the bougie gently pressed against it and then fastened in the penis, and the patient returned to his bed.

Recovery was uneventful. On the fourth day I removed the bougie and irrigated the urethra with a hot boric acid solution. On the tenth day I removed the perineal tube, and a No. 13 American sound passed along the urethra into the bladder without interruption or causing pain, and the same day about one-fourth of the urine flowed through the natural channel. Three days after the drain was removed from the bladder, the opening through which the tube passed was closed. Urine continued to escape in decreasing quantity through the opening left opposite the laceration in the urethral floor for ten days after the vesical drain was removed, when the fistula closed and all the urine passed through the natural channel. August the 11th I passed, at one sitting, sounds from No. 17 to 20 American without difficulty or causing pain, except at the meatus.

At this date the patient is apparently fully recovered. He has neither pain nor tenderness and can retain his urine normally, and voids it in a full stream and with natural force. The caliber of the urethra is full size and accepts a No. 18 American sound without complaint. I admit that it is too soon to make claim for permanence, but I am convinced that the conversion of the one larger opening into three smaller one, with healthy and normal tissues separating them, will in no small degree obviate the tendency to stricture. In anticipation of criticism I wish to say that I am aware that it is considered good surgery to make immediate repair of a ruptured urethra. In this case so much damage by attempts at instrumentation and infection being present, I deemed it wise to postpone an attempt to restore the urethra until the parts were in a healthy condition.

RESECTION OF ARTERIES AND VEINS INJURED IN CONTINUITY—END TO END SUTURE—EXPERIMENTAL AND CLINICAL RESEARCH.

DISCUSSION OF DR. MURPHY'S PAPER

(Published in the last issue of The Railway Surgeon).

Dr. A. I. Bouffleur: I feel that this is one of the most important subjects that has been presented to the Association, and I desire to add a little testimony of my own relative to such experiments. Some two or three years ago, when connected with the anatomical department of a college in Chicago, I made a number of experiments in regard to the matter of injection. We would sometimes get subjects whose vessels had been injured, and the thought occurred to me that I might utilize the same principle in treating an injured vessel of large size that we employ in the treatment of injuries of the intestines. My experiments were carried out on the cadaver, not on the dog. The lateral (Lembert) suture was used as in the intestine. I was enabled by means of injection to bring more pressure to bear than the heart gives and was unable to force the injection fluid through the line of suturing. The invagination experiments, made at that time, were limited, but we were enabled to demonstrate that by invaginating the proximal end into the distal, we could use considerable force without leakage, and without putting in a large number of sutures. The lamented Dr. Parkes sutured one of the lateral sinuses and I

believe it has been done successfully a great many times since. I, therefore, see no reason why we should not be able to employ something of this sort in restoring injured arteries.

Dr. P. Daugherty: In the ligation of large veins Dr. Murphy spoke of the procedure as being very dangerous. I would like to ask him what veins he had in view when he made this statement.

Dr. Murphy: I had in view the femoral, subclavian and axillary veins.

Dr. W. B. Outten: Our president, Dr. Murphy, has given us an excellent paper, and while I am not competent to disagree with him regarding certain points, I want to say that, so far as these experiments go, there is one point which struck me very forcibly in connection with stitching these vessels. When he said that he was able to stitch the veins, then I said he has found the solution to a serious problem. But I do not believe that the doctor has demonstrated the possibility of suturing arteries, and I will give you my reasons as clearly as possible. In the operation for the radical cure of hernia you and I know that it depends upon one single fact, that is, the deposition of a certain amount of cicatricial tissue—connective tissue, if you please—which may be so continuous and solid as to stand the test of time until certain serious trouble occurs, when its absorption takes place, and today there is not a man living who will dare to say that he has performed an operation for the radical cure of hernia, which was radical per se and for all time to come. Is it possible to place cicatricial tissue in an artery? Is it possible to keep it there with the heart eternally pounding against it? It may be that the doctor has arrived at that point in which experience will prove that he can get rid of the cumulative force of the heart beat, and that the cicatricial tissue cannot be shaken. My doubt occurs in this way: Anybody who has investigated the healing of wounds knows that there is no such thing as ideal first intention; that a wound heals by first intention by the interposition of a certain amount of embryonic tissue. If we have the formation of cicatricial tissue in connection with an arterial wound, it appears to me that the continuous pounding of the heart will ultimately make it give way.

Dr. James T. Jelks: I desire to take issue with Dr. Outten in his criticism of Dr. Murphy's staement. By the demonstration, artery is invaginated within artery, and there is practically no formation of cicatricial tissue to dilate and cause aneurism later. The two ends are interlaced, hence union takes place promptly. There will be a small amount of embryonic deposit, but there will be no aneurism. I desire to say that this operation is a pathfinder in arterial surgery.

Dr. McCrae: I would ask Dr. Murphy if, in case the carotid should be incised very close to its bifurcation, what means would he employ then.

Dr. James B. Hungate: I would like to say that in this city in the spring of 1888 at the Woman's Hospital a clinic was given by Dr. Walter B. Dorsett. The case was one of extirpation of cancer of the breast. The operator accidentally wounded the subclavian vein on the left side. He saw that the patient's life hung by a thread. He became excited. The blood was oozing out of the incised wound in the large vessel. Every man present said something, or suggested some plan to control the hemorrhage. The wound was not sutured as suggested by the president, but someone caught the vessel with forceps and tied it laterally. A lateral incision of probably three-eighths of an inch in length was made and the vessel tied laterally with the hope that it would hold, and still leave enough lumen for the return of blood to the heart. The woman died later of phlebitis. We must have some kind of operation to successfully cope with these emergencies.

Dr. J. B. Murphy (closing): Suturing of the sinuses has been carried on for a great many years, in fact, I do not know how far back it goes. I remember in my very early practice I had a laceration of one of the sinuses and removed a large portion of bone and resorted to suturing. Ligation of the side of the vein is of rather common occurrence. The surgeon who frequently operates for removal of enlarged cervical glands, particularly since the fad or injecting them with iodoform has come into vogue, not infrequently cuts into the jugular vein, and in order to guard against the admission of air he ligates the vein temporarily, and instead of suturing, he mererly picks up the large vein with forceps and puts on a ligature. I have seen the evil results following this method. Without an infection you

have union of veins, and there is no danger of thrombosis. But where we have infection, then we have failure of union, the same as in cases of infection in other parts of the body, and we have secondary hemorrhage from the arteries.

The danger which my colleague, Dr. Outten, fears, I consider one of the least important, theoretically. When I first considered this subject this point came up, and I could see in my mind these aneurisms occurring from slight wounds, but I have found experimentally that the conditions are different. There is a difference in the condition. It is exactly the same as in other portions of the body. Physiology is right if we interpret it properly. When we have destruction of tissue, if we bring it into close apposition with similar tissue we have at first a deposit of connective tissue, which instead of expanding, contracts and contracts, in spits of the physiological functions performed by the part wounded or united. The danger is not from expansion. Where we get aneurisms which Dr. Outten alludes to, the wall of the vessel is divided, and there is the formation of a plug of blood clot in the opening. It is in such cases that we must expect to have the formation of an aneurism. I believe that aneurism will be the last thing to happen in the practical working out of this branch of surgery.

With regard to the bifurcation of the carotid, my experiments along this line had not advanced to the degree that I anticipated when I had a case. The carotid was divided within half an inch of the subclavian, and in that way I could not use it for the purpose of invagination as it is situated too deep in the neck. If the injury be high up, where you have division of the carotid, the internal artery is the one you want for invagination, keeping up the current on the inner side, and the collateral circulation to the side of the face will be found sufficient to preserve it from gangrene.

A Simple but Successful Treatment of Colles' Fracture.

In the Archiv fur klin. Chirurgie, vol. liii, p. 336, the results of a simple method of treatment of Colles' fracture of the radius, as carried out in the Königsberg Polyclinic, are given by Storp. This treatment is essentially the same as was advocated many years ago by Sir Astley Cooper, viz., the suspension of the arm by the wrist, the hand being allowed to drop sharply to the ulnar side. Storp insists that attention should be directed especially to the complications of a Colles' fracture, and not to the fracture of the radius. In almost any decently applied apparatus the bone unites rapidly and firmly. On the other hand, the complications, such as rents in the joint-capsule, made by splinters of bone, or openings into the posterior or anterior tendon-sheaths, or injury to the triangular ligament or its attachments should be attended to. In all such cases, if the hand remain too long in splints, organization of blood clots and the formation of adhesions in joint or tendon sheath delay complete recovery, or possibly permanently disable the hand. To avoid this, the fingers are now almost universally left free, and massage applied at an early date.

Storp has treated 104 patients in this manner: A strip of rubber plaster, two and one-half inches wide, is wound about the arm just above the wrist joint. A second piece is placed exactly over the first, a fold being made in it on the radial side, which stands out far enough from the arm to allow a large hole to be made in it. Through this hole a string is passed, and the arm is held high up on the chest, the hand dropping downward toward the ulnar side.

The treatment is at first rather painful, but if the arm is kept high up venous congestion is avoided and the pain becomes much less. The plaster is removed in ten days and the hand simply placed in a sling while the patient is advised to use it carefully. In a few of Storp's cases, in which there was extensive hemorrhage, massage was employed. The average duration of treatment was three weeks, while fourteen to eighteen days sufficed in patients under twenty years of age.

The results were exceptionally good. Of the ninety-five cases in which directions were carried out, the arms of ninety-one were completely restored in appearance as well as function; in the other four the functional result was a good one, but there was a slight radial deformity in three cases, and a rather marked radial deformity in the fourth.—Medical News.

Dr. H. L. Getz of Marshalltown, Ia., has been appointed chief surgeon of the Iowa Central Railway, to fill the vacancy made by the resignation of Dr. A. D. Bevan of Chicago, the resignation and appointment taking effect January 1, 1897. Dr. Getz has been for some years local surgeon for the Iowa Central at Marshalltown. He is also district surgeon for the Chicago & Northwestern, and local surgeon for the Chicago Great Western, and for the M. L. P. at that point.

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We wish to call attention to a report by Dr. Lewis A. Stimson of New York, which we reprint from the Medical News, entitled, "The Intravenous Saline Injections in Conditions of Severe Shock." The cases which he reports demonstrate the value of this procedure, which we have already advocated in these columns and which we believe should never be omitted in the treatment of surgical shock, especially where there has been much hemorrhage. The technique is so simple that the procedure may be resorted to under any circumstances where a piece of rubber tubing, an hypodermic needle, some boiling water and a little salt can be obtained.

We were surprised, in reading Dr. Chaffee's article on railway relief organizations, which is published in another column, to find that he had apparently forgotten the existence of The Railway Surgeon. This journal and The Railway Age, have, as the vast majority of railway surgeons will readily admit, been more forceful than all other instrumentalities combined in promoting the cause of railway surgery, railway hospitals and relief organizations of all classes. Indeed, The Railway Surgeon was founded for that particular purpose, and while other publications have done valuable service and are entitled to full recognition, we are surprised and pained to see Dr. Chaffee ignore the foremost exponent of the cause.

There is no more important subject connected with railway surgery than that of compound fractures, and so many of the injuries which the railway surgeon is called upon to treat are of this nature, the theme is always an interesting one. We are very glad to be able to republish, in this issue of The Railway Surgeon, a most excellent paper upon "The Treatment of Compound Fractures," by the president of the National Association of Railway Surgeons, Dr. F. J. Lutz of St. Louis, Mo., which he recently read before the St. Louis Medical Society, and which was first published in the Medical Review. Dr. Lutz is a practical and successful surgeon of large experience and can speak with authority upon any surgical subject.

Much interest was added to the last meeting of the C., M. & St. P. Railway Surgeons' Association by the presence of Dr. Solon Marks of Milwaukee, general surgeon of the company. The doctor, who is in much better health, by the way, than he was a year ago, took a lively interest in the proceedings and an active part in the scientific discussions. The remarks which he made upon fractures and their treatment, which we publish in other columns, are exceedingly pertinent and practical.

In speaking of the duty of the railway sur-

geon to his company, he says "He should guard the company's interest the same as he would his own, but while he is doing that he should not forget to be just toward all. There is no way in which he can serve his company better than by being just and truthful. He should observe his case attentively, so that if he is called upon to testify he can do so intelligently and conscientiously, and if called upon to testify he should try to appear before the judge and jury as an expert who is there for the purpose of telling the truth." These are words of wisdom and sound sense, and none can afford to ignore them.

STATUE OF DR. GROSS.

We are glad to learn of the successful casting, in Paris of the bronze statue, by A. Sterling Calder, of the late Professor Samuel D. Gross, for many years professor of surgery in Jefferson Medical College. As is well known the movement to erect a statue to this truly great surgeon was started by the American Surgical Association, of which he was the founder and first president. The necessary funds have been collected through the coöperation of the Alumni of Jefferson Medical College and a number of personal and professional friends. Congress has appropriated a sufficient sum for the erection of a suitable pedestal, and the monument is to be unveiled by a granddaughter of Dr. Gross during the Congress of Physicians and Surgeons, which is to be held in Washington in May of this year.

This statue is the second of its kind to be erected in this country to a physician and will be placed in the grounds of the Smithsonian Institution, near the Army Medical Museum, in Washington, D. C. The other was erected in New York some years ago to Dr. J. Marion Sims, a warm friend and contemporary of Dr. Gross.

It is often a subject of wonder that Americans have been so slow to honor in this way their great physicians and it is little short of shameful that the movement for the erection of the monument to Dr. Benjamin Rush has met with so feeble a response from the medical profession. May it not be due to the fact, however, that the physicians of this land, perhaps unconsciously, hesitate to put their hands in their poorly filled pockets for the honor of one of their own number, whom the people at large should be so quick to glorify?

A REVIEW OF THE RELIEF AND HOSPITAL DEPARTMENT.*

By Dr. Geo. Chaffee.

History.—The idea of the railway hospital was conceived and first put in operation in 1869 by Mr. A. N. Towne, vice-president of the Southern Pacific railroad.

This system is now in operation on the leading lines of the West, has reached the Atlantic coast over the Plant system and Chesapeake & Ohio, and its adoption is now under consideration by the Erie and other popular eastern lines.

The relief department proper was organized on the Baltimore & Ohio in 1880. and now has a surplus after sixteen years of $750,000. In 1882 the Plant system adopted its hospital department under the service of Dr. F. H. Caldwell as chief surgeon. On July 1, 1896, after selecting the most desirable relief features of the Baltimore & Ohio, the Plant system combined these features with its own hospital department, making what is considered an ideal relief and hospital department.

A Necessity.—In full health a home is a necessity and a comfort, a fact which applies with as great force to the railroad man as to any other business man. If in health a home is a necessity, there can be no question in regard to the necessity of such when one is overtaken by an accident or sickness requiring experienced and skillful hospital treatment. When an employe is suffering from sickness or an accident, both he and his employer are anxious that he should be made comfortable and restored to health as fully and speedily as possible, and that no further injury or delay be caused by negligence or incompetency. In this respect the railway hospital system leaves nothing to be desired, hence it becomes a necessity.

The fact that we have "well equipped city hospitals along the line" is no argument or excuse against the adoption of the railway hospital system.

Our best surgical talent and the best results in surgery cannot be secured on lines where the hospital system is not in operation. On lines operating their own hospitals, the services of our ablest surgeons may be secured.

"Railway men take pride in direct contact, and it is in the nature of a curative measure for them to have their surroundings thor-

* Read before the Annual Meeting of the Section on Railway Surgery, of the Medico-Legal Society of New York City, Dec. 16, 1896.

oughly railroadish, and the homelike element of the railway hospital is the one which satisfies the railroad man."

The relief and hospital department is a straight business proposition or transaction, founded upon business principles, having many beneficent features, chief among which is the humanitarian.

First Aid and Ownership.—First aid and first-class hospital service is provided, and from the time an injury is received until the case is dismissed it is under the care of specially trained surgeons. Uusually, except in times of a wreck, only railway men are treated at these hospitals. They own them and feel at home while in them.

Relief Cars and Transfer Features.—On the Plant system Dr. F. H. Caldwell has equipped a relief car for the transportation of the injured from the scene of a wreck to the hospital, and the sick and injured from one hospital to another. This is an economic, humane and up-to-date measure. It practically gives hospital treatment during transit, prevents pain and suffering, checks hemorrhage early, keeps the patient warm, saves time, and in surgery time is a life saver.

The transfer or interchange of patients from one part of the country to another will repay a thousandfold for any effort it may cost. It not only furnishes the employe with the best medical and surgical service in the land, including all specialists without extra charge, but provides for him, when indicated, a luxury which only those of means can afford, viz., transportation, change of climate and private hospital service until well.

Benefits and Relief Features.—We reproduce a table from the relief and hospital department of the Plant system, showing the monthly contributions made by the employes and the benefits they receive in return.

Class According to Salary per Month.	A $35 or under.	B Over $35 and not more than $50.	C Over $50 and not more than $75.	D Over $75 and not more than $100.	E More than $100.
Class According to Employment. Cost per month first-class those engaged in operating trains..	$ 1.25	$ 2.50	$ 3.50	$ 4.50	$ 5.50
Class According to Employment. Second-class not so engaged....	1.00	2.00	2.75	3.50	4.25
First or Second-class. Benefits for accidental injuries per day, not including Sundays:					
First 26 weeks.....	.50	1.00	1.50	2.00	2.50
After 26 weeks.....	.25	.50	.75	1.00	1.25
First or Second-class. For sickness per day, not including first 6 working days or Sundays, for 52 weeks.....	.50	1.00	1.50	2.00	2.50
First or Second-class. In event of death from					
Accident.....	500.00	1,000	1,500	2,000	2,550
Natural causes.....	250.00	500	750	1,000	1,200

We understand that employes of the Plant system receive the same insurance as do members of the Brotherhood of Locomotive Engineers, at a trifle less cost, with the many benefits of the hospital thrown in.

An Economy.—The relief and hospital department is in many ways a protection to employer and employed, annually saving thousands of dollars for both, hence it is an economy.

On lines where the hospital system is not in operation employes annually subscribe for the relief of their sick and injured fellows many times the amount of their contributions where the hospital is in operation. It costs the employer and employed less to maintain the railway hospital than to do without it. Experience has shown that in a railway or company's hospital it costs from forty to sixty cents a day to treat and care for an employe, whereas in a city or contract hospital the cost is from a dollar to a dollar and a half. The employe cannot secure the same care and attention in a contract hospital that he is sure to receive in the company's hospital. The railway hospital system prevents litigation by favoring compromises, prevents many annoyances, elevates the morals and the social standing of employes, the "tie that binds" is drawn more firmly, and we like each other better for it.

The railway hospital system under a staff of competent surgeons ever stands as a barrier between the claim department and those who would attack it from behind the popular mask of alleged injuries. One of the most popular and economical features of our great railway systems is their relief and hospital department.

How Maintained.—The relief and hospital department is maintained in some cases by endowments, in others by annual or monthly contributions from the corporations and by monthly contributions from the employes. In opening the department most corporations leave it optional with their old employes as to whether they shall make monthly contributions or not to the hospital fund. On the Plant system this plan was followed, and since July 1, 1896, out of nearly six thousand employes 98 per cent of them have applied for membership and made voluntary contributions. The Plant system contributes one thousand dollars monthly to the expense of the department, pays the salary of its chief surgeon, and President Plant personally guarantees to make good any deficit which may occur. The chances are that Mr. Plant will not be called upon for that purpose.

The Press.—It was reported that when Pompedius Silo, an officer of the greatest eminence and authority among the allies, said to Maurius, "If you are a great general, Maurius, come down and fight us," he answered, "If

you are a great general, Silo, make me come down and fight."

So if we are truly great in editorial work and in the line of railway surgery, we shall expect the officials and employes of our eastern lines to "come down," not to fight, but to work with us for the adoption of the relief and hospital department.

For the last two years the International Journal of Surgery has had the honor of advocating the cause of this beneficent form of relief. Our efforts have been ably supported by the medical and railway journals of this country, and especially by the daily press of this state and of Greater New York, for which we desire to tender our sincere thanks. At the last annual meeting of the New York State Association of Railway Surgeons a resolution was unanimously carried placing that society on record as favoring the Relief and Hospital Department.

Humane Feature.—We have now reached a feature of this question which is high and most worthy; yes, worthy of the best effort of our most popular American citizen, Chauncey M. Depew, worthy of the pen of Holmes or Whittier in their day.

The task has been assigned to one who responds when called, asking aid from the highest source.

Employes are not all able to be treated in luxurious homes, but their cuts, fractures and injuries are just as sore and painful as though they were able to afford the best of everything. The employes of our lines are on the train constantly facing danger and must meet the crash when it comes.

Wrecks have occurred and will continue to occur "just so long as human agents are necessary in the manipulation of railways." And since this is true we should neglect no particular whereby their horrors may be palliated.

Is it not far better to be prepared for half a dozen wrecks along the line, than to have even one occur with no preparation whatever?

The answer is short and easy, but we leave it unwritten. If we have adopted up-to-date and approved methods, then we have done our duty, our conscience is clear, our minds at rest, and we can do no more.

Western lines have done a great work for their employes. Are not the employes of the East as deserving as those of the West? We think so. Only the best is good enough for our railway men.

Railway officials of the East, let us put aside all argument, go with us to the summit of Pike's Peak, and while resting there under the stimulus of the journey, amid that awful silence and grandeur so far above the busy world, let us ask God to place us in a condition most favorable for the highest and noblest action of the human mind.

The inspiration which we shall receive when reduced to words will not differ materially from the Golden Rule.

While resting on this eminence let us glance along the various railway lines of this wonderful western country, and what shall we see? From Niagara and the Natural Bridge on the East, to the Golden Gate on the West, and from Mexico to far off Manitoba, all up and down those great western valleys and mountain ranges grand and beautiful scenery will meet the eye, and if we look a little closer we shall see the well equipped trains of many corporations winding their way along those valleys. By whom are these magnificent trains operated? By our noble railway employes who are in nearly every instance members of the hospital department, and many of them are also members of the Young Men's Christian Association. A sight well worth the effort of the journey.

On our return let us stop off at the highest point in our own Catskills. After looking down the historic Hudson toward Greater New York, and surveying the country from Niagara to Maine, what do we find? Only on the Long Island and Lehigh Valley do we find any form of relief that approaches the hospital system.

Our thoughts have been carried to a high plane, and while resting there an opportunity is presented for one of our number to do a charitable act of the highest order by endowing a railway hospital, the effects of which are not local or for a day, but will be appreciated by employes and looked upon by the entire railroad world, its beneficent effects lasting through time. We have reviewed our work of 1896 step by step, during the year we have taken those in a position to found railway hospitals along the hospital pathway until we have reached this high plane, and here we leave them, not alone or in danger, for we leave them as we found them, with their God—International Journal of Surgery.

By a general order the position of chief surgeon of the Vandalia system has been abolished. The following list of local surgeons on the main line has been promulgated: J. W. Marsee, Indianapolis; Amos Carter, Plainfield; E. B. Evans, Greencastle; J. F. Gillespie, Reelsville; J. B. Thornton, Knightsville; Joseph Gifford, Brazil; P. H. Veach, Staunton; S. M. Rice, Terre Haute; O. Mitchell, Marshall; W. W. Bruce, Casey; J. B. Walker, Effingham; C. W. Durst, St. Elmo; R. E. Beach, Vandalia; W. T. Easley, Greenville; W. M. Tibbetts, Highland; J. L. R. Wadsworth, Collinsville; H. C. Fairbrother, East St. Louis.

Extracts and Abstracts.

The Treatment of Compound Fractures.*

By F. J. Lutz, M. D., St. Louis, Mo.

No subject could be of greater importance to the general practitioner, as well as to the patient, than a correct knowledge of the treatment of compound fractures. No error is more common than to suppose that anyone is competent to take care of a case of compound fracture, and in no class of cases is an unfortunate result so universally attended with reproaches to the practitioner, and in many instances with disastrous results to the patient so far as his future usefulness is concerned. It will therefore not be considered inappropriate to discuss in a general way the principles which are well recognized as being fundamental in the treatment of these injuries, even though by doing so we depart from a practice which seems in vogue in medical assemblies, according to which the unusual and uncommon are given preference over that which is of everyday occurrence, and therefore of everyday usefulness.

I take it for granted that there will not be much dissent among those whose views are based upon experience and observation that the following procedures may be considered a safe basis of procedure in all cases of compound fracture:

First, cleanliness; second, re-establishment of normal relationship of injured structures; third, drainage; fourth, immobilization. Their applicability is modified only by the peculiarity of the fracture. The means wherewith these various indications are to be met differ with different surgeons, and the indication for their employment may be subject for debate. If this evening's discussion will bring out more prominently the various points, the session will have been well spent and I trust some good will be accomplished.

Permit me briefly to review the methods and indications for the use of the procedures and manipulations above spoken of. I wish to premise, that in my experience, by no means limited to the observation of my own work, but in which I have been enabled to witness that of others, I have found that the general practitioner, as a rule, agrees with the laity and does not consider the procedures necessary in the first treatment of a compound fracture the equivalent of a capital operation. Since it is well established that the prognosis in a case of compound fracture depends almost exclusively upon the first treatment, the importance of so conducting this first treatment, as we would an operation for the amputation of a limb, or the performance of a laparotomy, becomes at once apparent. I wish also to call attention to the fact, well known but often overlooked, that in the injury which we designate a compound fracture, the wound of the bone is by no means the most prominent injury, and by no means the one to which attention should be paid to the exclusion of all other injured structures.

I. First, as to cleanliness.—The statement that every compound fracture is an infected wound will require but little modification. The manner in which it is inflicted, the natural surroundings of the injured part and the contact of the wounded surfaces with these surroundings are ordinarily of a character to furnish the conditions for infection. The manipulations necessary to remove the materials in contact with the wounds which may produce sepsis should be of so thorough a character as to insure, as far as possible, the asepsis of the patient, and will therefore in all the more serious cases require the administration of an anæsthetic. I am not discussing at his juncture anything but the cleansing of the injured part; to do this, soap, hot water, a brush, ether or turpentine and the razor may all be necessary. Whatever means are employed, the wound and its surroundings should be completely and thoroughly freed from dirt. A person sustains a compound fracture of the leg, the ends of the bones protrude through the skin, and having been pressed into the ground are, as a rule, brought back into apposition as though this was the first indication to be met, and little thought is given to the well-known fact that micro-organisms enough have been introduced with the reduced bone to set up a violent infection of the tissues and of the system, to be the source of danger to the limb of the patient as well as to his life. For the purpose of being enabled to thoroughly cleanse every portion of the wound, the cutaneous opening or the rent in the fascia should be freely enlarged and the exposed and contaminated surfaces should be freely irrigated and scrubbed until nothing remains which can be removed. I intentionally omit discussing whether or not antiseptics are of much importance in the first treatment of fractures. Personally, I have for several years discarded their use except in specific instances, and have found that hot water answers every purpose. The employment of antiseptics, especially in the dressing of compound fractures has, as in dressings for other purposes, often been substituted for surgical cleanliness, and in many instances the practitioner believes that he has done his full duty when he has wrapped a liberal quantity of iodoform and bichloride gauze around a compound fracture, while the tissues underneath have not received his careful attention.

II. When considering the re-establishment

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of the normal relationship of the structures injured in a compound fracture, our first thought reverts to the injured bone and, perhaps, this is not improper, for in many instances it requires our sole attention, and in other cases the greatest share of our activity. The reason why we are solicitous about the reduction of the fracture is not only because we desire to place the broken bones in such a position as will enable the reparative process to re-establish the contour and line of the bone, but also because the injury which the displaced bone may continue to do to the surrounding structures, may become an additional source of injury and of danger subsequently and it is a matter of prudence to remove every possible source of irritation at the earliest possible moment. Experience teaches that the best results are obtained when reduction is accomplished promptly and properly, and when the bones are held in their proper relationship permanently after having been once reduced. The methods by which this reduction is accomplished are numerous, and many of them applicable to a variety of cases, none, however, to all; and each individual case should be judged and treated in this respect upon the indications which it presents. When there is no tendency to displacement, the dressing necessary for the compound fracture, and such lateral supports as are furnished by long splints, if the fracture occurs in any of the extremities, or by the retaining roller if the fracture involves the thorax, the pelvis or the head, will ordinarily suffice. If, however, the line of fracture be oblique with a tendency to over-ride, and this applies only to the fractures of the long bones, then immobilization of the fragments by silver wire, to be afterward removed or to remain permanently, or by ivory or bone pins, to remain in situ, best accomplishes the object.

But we must not lose sight of the fact that besides the bone, other structures may be and are injured by the same force which caused the dissolution of continuity in the bone; and of the structures injured the most important are the blood vessels. It is true that the heavy weight passing over a limb or inflicting a compound fracture of the skull, ordinarily does not so tear the blood vessels as to permit long-continued primary hemorrhage, but we can all recall cases in which the secondary hemorrhage became a menace to the life of the patient. Upon the condition of the blood vessels will depend, to a large extent, the determination of the question of amputation in fractures of the extremities. We should therefore not overlook the fact that the condition of the circulation in the limb should be an important factor in determining the question of the treatment. With modern views of wound treatment and of biological processes, comparatively few limbs are sacrificed to amputation. The exposure and ligation of bleeding vessels, the union by suture of injured vessels, the position of the limb surrounded by warmth to favor the obstructed circulation are all matters of vital importance, and must be applied according to the necessities and indications of the case.

How little attention is given to injured nerves in connection with compound fractures, and how often do we not see as the result of neglect in the treatment of nerve injuries associated with fractures, paralyses of groups of muscles or of an entire limb, and its usefulness thereby impaired, although so far as the bone is concerned a perfect result seems to have been obtained.

Of no less importance is the necessity of repairing tendons and muscles. Whenever possible, the severed tendon should be reunited with catgut or silkworm gut, or such other material as the preference of the surgeon suggests.

III. Drainage.—A compound fracture means laceration of tissue, it means the opening of lymph spaces, the tearing of connective tissue; it may mean the laceration of muscular tissue and of other soft structures, all of which is followed by wound secretion, more or less abundant, dependent upon the amount of the local injury. The manipulations necessary to thoroughly cleanse subcutaneous structures and spaces add an additional reason why thorough and complete drainage reaching into all the interstices should be established in cases of compound fracture. Sometimes gauze packed in various directions answers a valuable purpose; then, again, a drainage tube passed through the limb or emerging from the angles of the wounds serves a good purpose. Whatever the method, it should be sufficient to drain the wound and prevent the stagnation of wound secretions, thus avoiding the danger which threatens from infection. Thorough drainage established from the first limits the necrotic processes.

All of this should have been attended to before the surgeon proceeds to meet the

IVth Indication—Immobilization of the fractured bone. You will not think it presumptious if I call your attention to a sin of omission which I have so often found committed that I fear the old rule of Boyer is being overlooked and forgotten. I refer to the neglect of immobilizing the joint above and below the site of fracture; unless this is done, proper immobilization can not be accomplished. An abundant dressing to the wound with thorough covering of all projecting bony prominences will enable us to apply a plaster of Paris stirrup splint, or the less safe circular plaster of Paris bandage, or long lateral splints of sufficient tightness to insure the immobilization of the bones without interference with the circulation or without disturbing the processes necessary for the repair of the injury.

If it be of importance to inspect a simple

fracture at least once a week during the reparative process it is no less imperatively demanded that solicitous care be exercised and constant vigilance in keeping informed concerning the wound progress in the case of compound fractures. A fracture thoroughly and scrupulously cared for at the first dressing can safely be left undisturbed for a week unless the thermometer indicates at an earlier period the removal of the dressings and the cleansing of the wound.

It would lead too far to embrace in this synopsis particular fractures. I wish however to refer to one class of fractures more difficult to manage, and more serious in their consequences than others—I refer to compound fractures involving the joints. I believe that the principles already enunciated will suffice in all instances, provided there is added complete drainage and immobilization of the injured joint.

Pistol-Shot Wound of the Second and Third Cervical Vertebræ.*

By Charles Phelps, M. D.

The subject, a man thirty-five years of age, was shot in a street altercation, and the bullet, of .32 calibre, entered the tongue at the tip, made exit at its base on the same side, and secondarily entered the posterior wall of the pharynx just to the left of the epiglottis. He was shortly afterward admitted to St. Vincent's Hospital. His tongue at that time, and till within a day or two of his death, was so greatly swollen as to prevent exploration of the pharyngeal wound, which was known to exist only from the statement of a medical man who examined him previous to his admission. He had great pain in the back of his neck extending toward the shoulder on the left side. His articulation was difficult, respiration labored, and deglutition painful. His temperature was 99 degrees, pulse 80, and respiration 18.

Aside from the functional difficulties connected with the swelling of the tongue and adjacent parts, which subsided on the fifth day, and continued pain and a sensation of stiffness in the back of his neck without rigidity, his subsequent symptoms were purely those of a general septic infection. His temperature was high from the second day, when it rose to 104.8 degrees, and his pulse and respiration were frequent. The temperature, with the exception of the sixth day, when it did not exceed 100 degrees, varied each day from 101°+ or 102° to 104°+, and on the seventh and eighth days rose to 105°+. Its daily irregularities were somewhat increased by the use of alcohol baths. Intense hæmatogenous jaundice was developed from the fifth day, and on the tenth day stupor was followed by slight delirium, with intervals of mental lucidity and of tremor, and death.

On necropsic examination the subpharyngeal connective tissue was found to be gangrenous from the site of the wound, for a finger's breadth, as far as the inferior border of the larynx. The bullet was lodged between the second and third cervical vertebræ at the base of the transverse processes, both of which were fractured. The spinal membranes were uninjured, but they had been transuded by the gases of decomposition, which had penetrated the cranial cavity and given it a fœtid odor, and stained the external border of the left cerebellar lobe through the cortex a distinct slate color. The brain was hyperæmic and moderately œdematous, and there was moderate subarachnoid serous effusion.

The liver was of normal size and consistence, and like the other viscera deeply yellow.—New York Med. Journal.

* Read before the Society of Alumni of Bellevue Hospital, Jan. 8, 1896.

Intravenous Saline Injections in Conditions of Severe Shock.

By Lewis A. Stimson, M. D., of New York.

The advantages to be obtained by intravenous injection of large quantities of the "normal salt solution," during or immediately after operations accompanied by much hemorrage or shock, are now well understood. It is, perhaps, not so well known that similar advantages may be obtained by the same means in cases of injury followed by marked shock, with or without important hemorrages externally, or into the natural cavities, or among the tissues of the body. The following cases may serve as illustrations:

Case I.—A. R., aged thirty-one, was struck, December 17, 1895, on the right side and front of the abdomen and squeezed against a wall by a piece of structural iron weighing 700 pounds which he was engaged in moving. He was immediately brought to the New York Hospital. When I saw him, three hours later, the condition of extreme shock, which was present on admission, persisted; the abdomen was tender and distended, the flanks dull on percussion, and a slight intra-abdominal wave could be obtained. There was evidence of an intraparietal hematoma on the right side between the ribs and the ilium. The urine did not contain blood.

Twenty ounces of the salt solution were at once introduced through the median basilic

vein. This was followed by a prompt improvement in the general condition; and as the local signs grew no worse the attitude of expectation was maintained. Complete recovery followed.

Case II.—Chas. A., admitted to the New York Hospital December 11, 1895, after having just fallen from the third floor of a house. Several ribs on the left side were broken, and there was an extensive emphysema of the chest wall; marked shock.

Twenty ounces of the salt solution were injected into the median basilic vein. Recovery.

Case III.—James S., admitted to the New York Hospital December 13, 1895, with fresh burns, covering almost the entire body. Extreme prostration. The patient was placed in a hot bath and received a large saline injection, but died 3½ hours after admission.

Case IV.—William B., twenty years old, was admitted to the New York Hospital October 23, 1896, having just been run over by a dummy engine. The left foot and ankle were crushed, the joint being widely opened; compound fracture of the right radius; compound dislocation of the right thumb; simple carpo-metacarpal dislocation; profound shock; semi-conscious.

The left leg was immediately amputated, the patient receiving meanwhile a saline intravenous injection of 34 ounces; this brought his pulse down to 88, but an hour later it rose to 160; a second injection of 34 ounces was then given, bringing the pulse to 120. Recovery.

There is also reason to think that similar advantages may be gained by the same means in severe septic conditions. In July, 1896, I saw in the wards of my friend, Professor Pozzi, in the Broca Hospital, Paris, a woman, who had been admitted three days previously, gravely ill with puerperal septicemia. The only treatment had been the immediate administration of a large intravenous saline injection. This was promptly followed by a marked reduction of the temperature and improvement of the general condition, which still persisted when I saw her. The following case may be quoted in connection:

Case V.—Chas. L., aged twenty-seven, was admitted to the New York Hospital December 1, 1896, suffering from general peritonitis, due to perforative appendicitis. The attack began on the night of November 28-29th, about sixty hours before admission. The abdomen was distended, tense, and painful; the surface dusky; the pulse rapid, small, and of bad quality; temperature 102 degrees F. Fecal vomiting.

The abdomen was immediately opened, and the appendix, which had been completely divided near its base by ulceration, was removed. Several ounces of pus from the neighborhood of the appendix was removed, and then a large quantity of turbid serum from the general peritoneal cavity. The intestines were congested, distended, and coated in many places with a fibrinous exudate. The general peritoneal cavity was thoroughly irrigated and sponged with salt solution, drained with gauze and two large rubber tubes, and the wound partially closed.

The patient's condition, as shown by his pulse and surface circulation previous to the operation, occasioned much anxiety. About 24 ounces of the salt solution were injected by an assistant while I was operating. This was followed by an immediate improvement, which persisted through the day. On the following day the general improvement was maintained, and the local conditions were better, the left side of the abdomen being soft and painless. This continued until December 4th, when the vomiting was renewed, all efforts to secure a movement from the bowels having failed. The pulse again became almost imperceptible, the surface dusky, and the nose cool. An injection of 60 ounces was made, and the same improvement followed, but the vomiting persisted, and the patient died early on December 5th. It seems clear to me that in this case the injection prolonged life fully three days, enabled me to perform the operation and check the peritonitis, and only failed to save the patient because of the persistence of the intestinal paresis.

The good effect of these intravenous injections is doubtless due to the change in the physical conditions created thereby; the intra-arterial pressure is increased, and presumably, osmosis is carried on more freely. Possibly, too, the presence in the body of the large additional amount of water favors metabolism and excretion, and thus diminishes the production of deleterious compounds and aids the removal of those that are produced.

While no direct curative effect has been proved, yet the injection gives to a patient, who apparently has but a few minutes or hours to live, a respite, during which his organism may recover from the shock received, or throw off a septic assault that is pressing, or during which the physician may, perhaps, successfully employ remedial or helpful measures.

The technic is simple. A sterilized, graduated vessel, provided with a rubber tube about three feet long, ending in a fine pointed glass or metal nozzle, is required. The solution can be readily made by mixing common salt and water in the proportion of ninety-two grains (a large, but not heaping, teaspoonful) to a quart, and sterilizing it by boiling. It should be injected at a temperature of about 105 degrees F. The vein should be exposed, a liga-

ture passed beneath it, and the vein opened by snipping it half across with scissors. The water is then allowed to fill the tube, the nozzle is inserted into the vein, and the ligature tied about it so as to prevent slipping. The vessel holding the solution is then raised two or three feet above the patient, and the solution allowed to run in.

Some deem it simpler and equally beneficial to throw the solution into the subcutaneous tissue by means of a syringe and hollow needle, taking pains afterward to distribute the liquid by rubbing toward the heart.—Medical News.

Notes of Societies.

The Northern Tri-State Medical Association.

The annual meeting of the Northern Tri-State Medical Association, consisting of representatives from Ohio, Indiana and Michigan, was held at Ft. Wayne, Ind., January 18, 1897.

The Semi-Centennial of the New York Academy of Medicine.

The semi-centennial of the New York Academy of Medicine will be duly celebrated on January 29. The exercises will consist of addresses by President Cleveland and Dr. James D. Bryan and an oration by Dr. A. Jacobi, at Carnegie Music Hall, and the reception in the parlors of the Academy with music and refreshments.

The Association of Military Surgeons of Ohio.

The Association of Military Surgeons of Ohio was formed December 17, with Surgeon-General J. E. Lovel of Dayton, president; Major L. T. Guerin of Columbus, vice-president; Major H. M. W. Moore of Columbus, secretary; Major F. D. Bain of Kenton, treasurer, and Major E. C. Farquahar of Zanesville, Captain G. I. Cullen of Cincinnati and Lieutenant C. W. Newton of Toledo, executive committee.

Miscellany.

Cocaine Poisoning.

Dr Weinrich discusses cocaine poisoning originating from the urinary passages. The symtoms are very variable, but they are mostly referable to the nervous system. Cocaine must, therefore, be used with caution in neurotic individuals. The symptoms may consist of stupor, vertigo, headache, and these may end in collapse with severe precordial anxiety. Clonic and tonic spasms are noted, which may produce sleeplessness and restlessness in some people and unconsciousness in others. Mental excitement and a mild degree of mental aberration may be observed. Paralysis, tremor, slight loss of co-ordination may also be noted among the motor symptoms. If respiratory difficulty, cyanosis, loss of consciousness supervene, the prognosis becomes very serious. The unfavorable action of cocaine on the heart rarely becomes threatening, the respiratory symptoms being most significant. A feeling of suffocation with irregular stertorous breathing may arise, and eventually Cheyne-Stokes breathing. Death may result from respiratory paralysis. Idiosyncrasy to cocaine is sometimes very marked, so that the size of the dose may be almost without perceptible influence on the intoxication symptoms produced. The author records two cases of cocaine poisoning, the first he had seen among several thousand of bladder cases which had been cocainized. In comparing experiments on animals with observations on man, it is proved that cocaine can be absorbed from the bladder, but the absorption is so slight as to be practically without significance. With increased dexterity in the use of the cystoscope, perhaps weaker solutions of cocaine can be employed or no local anæsthetic used at all. Cardiac and vascular diseases, pernicious anæmia, are contraindications to its use. The horizontal position should be adopted when it is used. Chloroform may be given when spasms arise, but the chief remedy against cocaine poisoning is artificial respiration. The proposal of Gauchier to add nitroglycerin (coc. mur., Merck, 0.2; aq. dest., 10; sol. nitroglyc., 1 per cent., gtt. x.) is worth bearing in mind.—Berliner klinische Wochen schrift.

The Preparation of Chromicized Catgut.

Most of the methods of preparation now in vogue for the preparation of chromicized gut take up too much time. Recently Dr. J. F. Binnie of Kansas City has adopted an old method of preparation modified in a number of details which almost absolutely exclude the possibility of error, and render the ligature materials as free from contamination as the instruments are after boiling. The modified method is as follows:

(1) Cut the catgut into lengths of from four

to eight feet. Wash in soap and water, and wind each length on a separate glass reel.

(2) Place in a large quantity of a 1 per cent watery solution of chromic acid, and leave in this for from six to nine hours. Strain off this solution through aseptic gauze.

(3) Replace the chromic acid solution by a large quantity of sulphurous acid. After twelve hours place aseptic gauze over the mouth of the vessel, strain off the acid and replace it by

(4) A 2 per cent solution of salicylic acid in commercial (not absolute) alcohol. Place this in a water bath and boil for fifteen minutes or longer. The alcohol reaches a temperature of 175 degrees Fahrenheit when the vessel in which it is contained is not closed, but in practice if a stopper is applied loosely a higher temperature may be obtained. Alcohol, in a bottle closed by a plug of cotton, very loosely inserted, is easily raised to a temperature of 189 degrees Fahrenheit. This temperature is higher than that required to sterilize virulently tuberculous milk--viz., 184 degrees Fahrenheit. (Vide Sims Woodhead, British Medical Journal, February 1, 1896, p. 297.)

Common alcohol (80 per cent) at a temperature of 177 degrees Fahrenheit sterilizes anthracized catgut in one hour. Common alcohol (90 per cent) at a temperature of 172 degrees Fahrenheit does the same in three hours, while absolute alcohol at the same temperature is inert. Koch proved that 5 per cent carbolized alcohol is useless as an antiseptic at ordinary temperatures, but Saul shows that although anthracized catgut is unaffected by boiling in a 5 per cent solution of carbolic acid in absolute alcohol, yet if 10 per cent of water is added sterilization is attained rapidly even if the catgut is thickly covered by fat or vaseline. In Saul's tables we find it stated that 90 per cent alcohol plus 5 per cent of carbolic acid kills the spores of anthrax in ten minutes; on studying his experiments, however, one finds that the longest time required was seven minutes. In the preparation of ligatures for use, Saul merely exposes the raw catgut to the above solution for fifteen minutes after the boiling point has been reached. He makes use of a special apparatus to collect and return the evaporated alcohol so as to prevent a too great concentration.

In view of these experiments of Saul, it might, perhaps, be advisable to substitute for the salicylated alcohol carbolized, 90 per cent alcohol.

To have the ligatures in a convenient form for carriage, Binnie places them in small, sterilized bottles, with rubber stoppers, and pours on a sufficiency of salicylated alcohol, and lest there should have been any contamination while the change is being made from one bottle to the other, they are again boiled in the water-bath for a few minutes and the stoppers pressed home. Just before operating the firmly-stoppered ligature bottles are immersed in a strong solution of corrosive sublimate, so that by the time they are required, not merely are the ligatures sterile, but the outside of the bottles are clean enough to be handled by the surgeon himself, and there is no danger that the ligatures, in being removed from the bottle, will be contaminated by touching the outside of the glass.

The reason for cutting the ligatures into lengths of from four to eight feet is that in very many operations but one or two ligatures or sutures are required, and if each reel contains many feet of ligature one is tempted to return what is left, while, if only a small quantity of gut is on the reel, one can throw away the remnant and so avoid chances of accidental contamination. If long ligatures are wound on ordinary glass reels there will be so many layers superimposed, one on the other, that the chemical solutions may not get into the deeper layers This is another point in favor of the short lengths of ligature advised.

The use of small bottles to contain the ligature is convenient because, in the course of an operation, one may accidentally contaminate the contents of one bottle and yet have plenty left in proper condition.

If small bottles are used for carriage because of their convenience, they should not be used in the original processes, because they do not contain enough of the chromic acid solution or of the sulphurous acid in proportion to the quantity of catgut to be acted upon.

A special feature of this method of preparation is that from beginning to end of the process of sterilization the ligatures are untouched by the fingers, and forceps are only used once—viz., to transfer the reels from the large receptacle to the small bottles; thus many chances of accidental contamination are avoided. Catgut which has been soaked in a one per cent watery solution of chromic acid for nine hours remains unabsorbed at the end of three weeks. When less resistant gut is desired, one merely lessens the time of exposure to the action of chromic acid.—Kansas City Medical Index, June, 1896.

The University Medical College of New Orleans is about to establish a training school for negro women as nurses.

Notes, News and Personals.

Sir Joseph Lister has been made a Peer and is the first medical practitioner called as such to the House of Lords.

Prof. Wm. H. Pancost, the distinguished surgeon, died at his home in Philadelphia, January 4, 1897, at the age of 64 years. He was born in Philadelphia in October, 1835, and graduated from the Jefferson Medical College in 1856. After three years of post-graduate work in London, Paris and Vienna, he established himself in Philadelphia and soon became known as a bold and brilliant operator. During the war of the rebellion he served as a surgeon and in 1874 was elected to succeed his father in the Jefferson Medical College. In 1886 he became Professor of Surgery in the Philadelphia Medico-Chirurgical College.

The trained nurses have organized an association known as the Trained Nurses' United Aid Society of America. The object of the society is to relieve the members whose professional activity is suspended on account of sickness or accident, and in cases of death the payment of a funeral benefit. It is also proposed to establish homes of rest, to loan money in cases of temporary need, to endow beds in hospitals, etc.

Dr. T. G. Wormley, professor of Chemistry and Toxology in the University of Pennsylvania, died on January 3 after a lingering illness. He graduated from the Philadelphia Medical College in 1849 and in 1852 became professor of Chemistry and Natural Science at Capitol University, Columbus, O. He was also professor of Chemistry and Toxology in the Sterling College from 1854 to 1857. In 1887 he accepted the chair of the medical department in the University of Pennsylvania.

It is said that Dr. Wm. Pepper has succeeded in skiagraphing a number of aortic anuerisms. It is presumed that shadows are produced by the blood and its contained iron.

The physicians of Yarmouth, England, recently banded together and demanded higher fees from the benefit associations and restricted the limitations of the class of patients to be attended at clubrates. The associations also combined, and finding that they provided $10,000 worth of business a year, established an office of their own in the city and hired a doctor from out of town to manage it.

A certain tea-merchant of St. Johns, N. B., in 1892 sued the Pullman Palace Car Company for $20,000 for a severe cold which he caught in a Pullman palace sleeping car. The case has recently been decided in favor of the Pullman Company.

Notices and Reviews.

Essentials of Physical Diagnosis of the Thorax. By Arthur M. Corwin, A. M., M. D.; Demonstrator of Physical Diagnosis in Rush Medical College; Attending Physician to the Central Free Dispensary, Department of Rhinology, Laryngology and Diseases of the Chest. Second edition revised and enlarged. Philadelphia: W. B. Saunders, 1896.

This little book was originally written as an outline for the guidance of the author's classes in physical diagnosis, but the immediate popularity of the first edition has induced him to prepare a second enlarged and revised edition. No claims are made for originality, the design being rather to present known facts and methods in a more or less graphic arrangement, enabling the student to catch and retain easily the points to be impressed.

The author has sacrificed, no doubt intentionally, all attempts at style and literary form for the sake of presenting the greatest number of facts in their proper sequence and co-relation in the smallest possible space and with the fewest possible words.

He states in his preface that he has drawn from the standard works on diagnosis, general medicine, physiology and anatomy for the facts which he has presented and a more or less careful search fails to reveal any important errors. Possibly some points could have been more firmly impressed with a little more elaboration, but as a whole the language is clear as well as concise, and the statements are positive.

The press work and binding are characteristic of Mr. Saunders and as usual all that can be desired.

The Electro-Therapeutist, a monthly journal of electricity, as applied in medicine and surgery, edited by Dr. Wm. F. Howe, Ph. D., and published in Indianapolis, Ind., is the latest candidate for professional favor which has reached our table.

No. 1, Volume 1, contains a practical paper upon "The Use of Electricity in the Examination, Diagnosis, Prognosis and Treatment of the Nose, Throat and Ear," by W. Scheppergrell. Also condensed facts for the general practitioner, besides editorial matter and "electro-miscellany." It strikes us that there is a field for just such a journal as the Electro-Therapeutist and we wish the baby well.

The editor will be assisted in his work by C. A. Burn, M. D., Richmond, Va.; Wm. Scheppergrell, M. D., New Orleans, La.; J. Mount Bleyer, M. D., New York, and Wm. H. Walling, M. D., Philadelphia, Pa., associate editors.

Communications.

The following letter, which hardly requires comment, has been received from Dr. George M. Gould, editor of the American Year-Book of Medicine and Surgery, and until recently editor of the Philadelphia Medical News. The action of Messrs. Wm. Wood & Co., which, so far as we are aware, has not been explained, is scarcely comprehensible and shows not only an extreme selfishness, from a scientific standpoint, but a manifest business shortsightedness:

To the Members of the Medical Profession:

I would be pleased to have an expression of opinion from you, either personally or through some medical journal, as to the relations of the lay publishing firms of medical journals and the profession. The request is suggested by the fact that Messrs. Wm. Wood & Co. of New York refuse to permit the editors of "The American Year-Book of Medicine and Surgery" to use in our abstracts of Medical Progress articles and illustrations first printed in the "Medical Record" and the "American Journal of Obstetrics."

This decision seems to me to be wrong for the following reasons:

1. It prevents the dissemination of medical knowledge. The Year-Book condenses, systematizes and criticises the year's medical work in a shorter space and more permanent manner than the journals, and has thousands of readers no single journal can claim, or hope, to reach. Every physician writes and publishes articles in order that every member of the profession may, if possible, learn of his work, and that science and progress may thus be furthered and humanity benefitted. To interfere with such dissemination of our literature in reputable publications is, I think, discourteous and unjust to the profession and an injury to medical science.

2. This injustice and injury to medicine become all the more striking when physicians do not receive a cent of pay for contributions, from the publication of which the lay publisher is supposed to make considerable financial profit.

3. No other publishers in the world, not even those who pay authors for their contributions, have in the least objected to our reproduction of quotations, abstracts and illustrations from their journals.

Do you wish to limit the dissemination of your contributions to medical science by such an exclusion of them on the part of publishers from reputable publications? Is this literature the property of yourself and of the profession or not? Does your gift of it to a journal make it forever the private property of the publishers of that journal? Is it not rather a loan for temporary use only?

Will you not hereafter demand that there be printed with your article a statement that the right of abstracting the text or reproducing illustrations is guaranteed?

Sincerely yours,

GEORGE M. GOULD.

119 South Seventeenth street, Philadelphia, Pa., December, 1896.

BOOKS AND PAMPHLETS RECEIVED.

"The Differential Diagnosis of Neurasthenia and Its Treatment," by Elmore S. Pettyjohn, M. D. Reprinted from the Journal of the American Medical Association.

"Erb's Primary Muscular Atrophy," by Elmore S. Pettyjohn, M. D. Reprinted from the Journal of the American Medical Association, November 28, 1896.

"Rheumatism; Its Pathology and Modern Treatment," by Elmore S. Pettyjohn, M. D. Reprinted from the Medical Fortnightly.

"Notes on the Differential Diagnosis and the Treatment of Neurasthenia," by Elmore S. Pettyjohn, M. D. Reprinted from the Physician and Surgeon.

"A New Contrivance for Intestinal End-to-End Anastomosis," by J. Frank, M. D. Reprinted from the Medical Record, October 3, 1896.

"Remarks on the Causes of Glaucoma," by Leartus Connor, M. D. Reprinted from the Journal of the American Medical Association, November 14, 1896.

"The Proper Indications for Repair of Pathologic Lacerations of the Cervix Uteri, and the Proper Operations to Meet Them," by Alber Goldspohn, M. D. Reprinted from the Journal of the American Medical Association, March 14, 1896.

"Vaginal Hysterectomy by the Clamp Method," by Sherwood Dunn, M. D. Reprinted from the American Journal of Obstetrics and Diseases of Women and Children, Vol. xxlv., No. 4, 1896.

"The Doctorate Address Delivered at the Commencement of the Illinois Medical College, by Seth Scott Bishop, M. D., LL. D. Reprinted from the Journal of the American Medical Association, November, 1896.

"Adenoid Vegetation in the Vault of the Pharnyx," by Seth Scott Bishop, B. S., M. D. Reprinted from the New Albany Medical Herald, September, 1896.

"Solutions Dobell," by Edwin Pynchon, M. D. Reprinted from Annals of Ophthalmology and Otology, October, 1896.

THE Railway Surgeon

VOL. III. CHICAGO, FEBRUARY 9, 1897. No. 19.

THE RAILWAY SURGEON.*

(A Misnomer.)

BY J. W. WRIGHT, M. D., COLUMBUS, OHIO.

I reside in a part of the country where we hear so much of "railway surgery" and "the railway surgeon" that one would imagine that the former was a special science per se, and that the latter must be the possessor of a certain definite technique peculiarly adapted to his particular occupation. This idea has prevailed to such an extent that societies ad infinitum have been organized and have multiplied with the rapidity and thriftiness of the Canada thistle until the surgeon who is so unfortunate as not to be employed by some railway company as "chief surgeon" or "consulting surgeon," or even in the menial capacity of "company's surgeon," feels himself isolated and not fit companion for these select. We have two national associations of railway surgeons, as you are well aware. One was not enough, and for some reason another had to be formed. Then there are state and district associations galore and each system or company, however small, is in possession of an organization of its surgeons.

I do not take up this subject for the purpose of presenting a grievance against medical and surgical societies which have the good of the profession at heart, for these societies when properly conducted should be fostered. My object is to assist in ridding ourselves and the profession of a senseless fad. "Railway surgeon," "railway surgery," "railway hospital," "railway spine," "railway shock" and an exuberant number of synonymous expressions are constantly buzzing in our ears until we are almost deafened. Can you see where an amputation of a finger or a hand that has been mangled between the bumpers of freight cars differs in any respect from one in which the injury was received in a machine shop or elsewhere? Differentiate "railway spine" from any other? Wherein does "railway amputation" differ from others? There has been so much of this "stuff" (it can be called nothing else) that the railway companies are becoming heartily sick of it, and the officials of some of the larger systems are looking into the matter in a way that will not be very pleasing for a few who are riding this hobby. Let us look at this matter for a moment. Take the B. & O. system, for instance. It is a good one and we are all proud of it, but I am afraid some of us think we own it. We don't, however. But let me show you how it is imposed upon by these societies. The B. & O. Railway Surgeons have two meetings a year, one a business meeting and the other a semi-business and semi-social meeting. We are to ask for passes for ourselves and wives to both of these meetings. One of these meetings in the summer, when we all need an outing, is sufficient, and at that time all necessary business can be transacted. Then there are the national associations—two meetings. All surgeons on roads tributary to the B. & O. expect passes over it to these meetings. Then the same thing is expected by the members of the state societies. Don't you think the B. & O. and the Pennsylvania and other large systems are being imposed upon, and don't you believe that we are assisting others to impose upon them by lending our aid to these different organizations?

As a rule, those who conceive and foster national and state railway surgeons' associations and railway journals have not the interest of surgery nor of the surgeons, nor even of the railways, at heart more than to make for themselves a means of reward in one way or another. Any good surgeon is a good railway surgeon, and that is the whole business in a nutshell.

* Read at the meeting of the B. & O Railway Surgeons' Association, held at Philadelphia, Pa., June, 1896

As I indicated before, I have no grievance against medical and surgical associations when they are organized for scientific purposes. I think every physician and surgeon should be a member of a local medical society, of his state medical society, and, if convenient, of the American Medical Association. He should certainly be a member of his local medical society, because he should foster the friendship and fellowship of his professional colleagues with whom he is coming in constant contact, and of the state society because it is a factor in legislation. A well organized state society can do more to bring about good sanitation and effective laws for the suppression of quackery than all other combined organizations and influences. He should be a member of the American Medical Association for patriotic and professional reasons combined. A few days' rest and recreation in attendance upon the greatest medical association in America after a year's hard work does much to invigorate one and tends to give one more confidence in his own abilities.

I am in favor of a junket once a year in seasonable weather, and I am sure that the company we serve will do all in its power to make it pleasant for us. As far as the real business necessary to this association is concerned, it can be transacted in one hour. As the matter now stands, there are two meetings a year of three days each. This is preposterous when we come to consider that the directors of this road meet only once a year and transact all of their business in one day. There is no physician here who, in justice to himself and his practice, can devote so much time to these organizations; there is not enough money in it if we were paid in cash exorbitant fees, and I am sure that the company does not insist upon this sacrifice of time.

AMPUTATIONS PROTHETICALLY CONSIDERED.*

By J. M. Thorne, M. D., McKeesport, Pa.

Amputations in general should be done with regard for prothesis, or the art of artificial limb adjustment, for if an amputation be done never so nicely and the result be a stump to which an artificial limb cannot be adjusted, it is apt to bring discredit upon the operating surgeon; therefore it behooves us, as railway surgeons, to make a study of prothesis and familiarize ourselves with artificial limbs, their points of bearing, and the most satisfactory place for amputation from the point of view of the artificial limb maker. It is not my province to discuss the different makers and their wares, but rather to point out the strictly surgical features of the subject by discussing, briefly, first stumps, then the different amputations.

When the stump has healed after an amputation, the first question we are asked is: "When can I be fitted to an artificial limb?" I would say the sooner the better. By disuse, the limb accumulates fat, enlarges and becomes flabby —a condition which wholly unfits it for the application of an artificial limb.

The effect produced by an artificial limb on a stump is to contract, harden and solidify the tissue, and a limb cannot be properly controlled by a stump which is not in this firm condition. Therefore it is best to begin treatment of the stump before the limb has accumulated fat, to prepare it for the artificial limb. As soon as healing is complete and tenderness does not prevent handling, massage, daily applied, and bathing will improve the tone of the tissue; then light bandages, preferably of rubber, should be worn constantly till all adipose tissue is crowded out and the stump is firm. As soon as this condition is arrived at, the stump is ready to have a limb adjusted, and it is possible to get a stump ready as early as one month after amputation, though it usually takes longer.

Passive motion of the joints should be made so as to prevent anchylosis, and more especially to prevent the contraction of muscles from limiting motion.

In amputation through the shaft of a bone it is rare that the end of the bone is sufficiently protected to allow it to become one of the points of bearing in an artificial limb; therefore the weight is usually distributed over a considerable surface of the limb, as when amputation is done above the knee, the points of bearing are the whole surface of the conical thigh stump and of the tissues about the ischium; when below the knee, the points of bearing are the sides of the leg, the surface of the tuberosities of the tibia.

Amputation and disarticulation at a joint

*Read at the meeting of the B. & O. Railway Surgeons' Association at Philadelphia, Pa., June, 1896.

produces an end-bearing stump, which is decidedly preferable to the inter-articular amputation, because, when the articular surface is preserved, it presents a surface prepared by nature for pressure, covered by a non-adherent skin.

Amputation should be performed high enough to insure healthy and sound tissue for flaps, except, perhaps, about the fingers and hand, where we might properly strain a point to save a most valuable member by leaving a surface to heal by granulation, provided we do not leave the bone uncovered.

A good rule is: "Enough muscle to cover the bone, enough skin to cover the muscle." Many prefer skin flaps. I like them only in amputations done on thin persons. When skin flaps are used we should be careful to take the subcutaneous tissue with the skin down to the sheath of the muscle, as the nutrition of the skin depends considerably upon the subcutaneous tissue not being haggled. The flaps should be just long enough to fit neatly when sewed up, with a little to spare to allow for the natural contraction which occurs after the Esmarch bandage has been taken off the limb. The line of union should never be over the sawed end of the bone, nor over any point of bearing, when possible to avoid it. A superabundance of flap is a disadvantage in the socket of an artificial limb. The bone should be sawed off squarely, and any prominent point or rough edges nipped off with the bone forceps. It is generally considered best to make a periosteal flap to cover the end of the bone, but I am not clear in my mind about the advantage of such a procedure. I have seen exostoses occurring from it, and I believe annular necrosis will not occur if the periosteum is carefully divided with a scalpel and the bone sawed off in the line of incision, the object being not to denude the bone of periosteum above where it is sawed.

The nerves should be retracted and cut off with a sharp knife so that their ends will be above bony prominences which might become pressure points. We should avoid bruising the nerves by grasping them with hæmostatic forceps.

Amputations done in the upper extremity should be governed by one rule, i. e., save as much in length as possible.

Prothesis has not accomplished much for the upper extremity. Any remaining parts of the hand are by far more useful than any artificial hand ever invented. An artificial limb can appropriately be applied for any amputation between the hand and within five inches of the shoulder, with the expectation of its being quite useful. Parts of hands or fingers that are artificial are scarcely more than attempts to cover up deformity. A limb applied to the shoulder is merely a matter of appearance. When amputation is done at the shoulder, the head of the humerus should be left in situ if possible, to preserve the natural contour of the shoulder, a matter which lends considerable to appearance.

In amputating fingers, or parts of fingers, we should utilize palmar tissue for flaps as much as possible on account of its greater vitality and tactile sense, and to get the scar out of the way of pressure. Otherwise, any amputation done properly in the upper extremity should afford a useful stump to the artificial limb maker. It is in amputations of the lower extremity that prothesis has done so much for our patients, except for amputation at the hip-joint, and I believe every effort to adjust a limb to the trunk has proved a failure. In amputation of the thigh it is well to save as much in length as possible. A stump of four inches on the internal aspect of the thigh is as little as can be utilized for the adjustment of an artificial limb. It is in the thigh amputation that long flaps are of distinct advantage, as the points of bearing are the whole surface of the stump, except the lower end, and about the ischium, and the tendency is for the bone to protrude if any undue tension is brought to bear on the flaps. The line of union should be brought well behind so as to escape the region of the lower end of the bone.

A knee-joint amputation furnishes an end-bearing stump, which is the most desirable stump possible. We should endeavor to have a long anterior flap, in order to get the scar well back of any pressure point. Do not trim off the condyles or any part of the articular surface. This is important. A skin flap over a smooth articular surface which is accustomed to bearing pressure is the condition most desirable, and such a stump can usually take all of the weight of the person on the end without discomfort. When the articular surface is removed the flap becomes adherent, making it incapable of taking scarcely any weight, and

such a stump is in no way better than a conical thigh stump.

It is said that if the patella can be securely fastened between the condyles, a good stump is formed, but as there is doubt about it being securely anchored there, I feel that it is not worth while trying it. Amputation of the leg can be done at any point from three inches below the knee to the junction of the middle and lower thirds, with the prospect of a stump which will be highly satisfactory to the manufacturer of limbs. When it is not possible to save three inches of the tibia, a knee disarticulation should be done. The lower third of the leg is a region unsatisfactory for amputations, as a conical stump is precluded. In leg amputations the fibula should be sawed off a little above the section of the tibia, except when within six inches of the knee joint, when it should be disarticulated, thereby making the stump more conical. The anterior corner of the divided tibia should be trimmed to prevent the sharp edge injuring the flap.

The different amputations through the foot and ankle have been the subject of much controversy for some time. I will not attempt to discuss them all with you, but will endeavor to make plain some settled points in regard to these operations. Chopart's, Heys', Lisfranc's and Forbes' operations have all been condemned by artificial limb makers as unsatisfactory in the majority of cases. Certain it is that they should not be attempted unless a long plantar flap can be secured and the cicatrix formed well upon the dorsum of the foot. The tendency after these operations is for the tendo-Achillis to draw the heel up, as the opposing extensor tendons have been divided. When this condition occurs the tendo-Achillis should be divided. For this reason Lisfranc's operation is preferable to that of the others, as the insertion of the tibialis anticus into the internal cuneiform is preserved. I might say, however, that one manufacturer claims to have overcome all the difficulties arising from these operations, by means of an aluminum socket for the stump. Pirogoff's amputation is a fairly useful one, but is inferior to that of Symes. Symes' amputation is by far the most satisfactory operation in this region, and if properly done affords a stump which can be said to be perfect, in spite of all the criticism it has been subjected to. Prof. Stephen Smith says that reamputation is necessary in three per cent. of the cases of Symes' operation.

Five years ago, at a meeting of railway surgeons, a maker of limbs of large experience claimed that amputation above the ankle was preferable. Many others have been positive in their condemnation of the Symes operation.

These men may be right in their assertions, because the cases falling under their observation were operated on under the original method of Symes, and it is described in the same manner in the text-books of to-day. The method to which I wish to direct your attention is that of Dr. W. H. Hamilton of Pittsburg, which is generally adopted in Western Pennsylvania, and which has never failed, as far as I can learn, to turn out a stump which can be satisfactorily utilized by the artificial limb maker. A stump after this method is always an end-bearing stump and can support the weight of the body without any difficulty, and I have never seen one that would not stand pounding on the floor with a bare stump. I quote Dr. Hamilton's own words in describing his method:

"The foot being held at a right angle to the leg the point of a large scalpel should be introduced at the tip of the external malleolus and an incision made directly across the sole of the foot in the direction of the tip of the internal malleolus and terminated about one-half an inch before reaching it, or the incision may be made in the opposite direction if it suits the convenience of the operator better. The extremities of this incision should be joined by one directly across the front of the ankle; this incision should arch slightly upward and not downward, as represented in some of our works on surgery, for so much tissue is taken from the sole of the foot that when the stump is dressed the integument from the sole should extend an inch at least above the plane of the lower ends of the leg, and the cicatrix be above the line of pressure. These incisions should be made directly down to the bones by the first sweep of the knife. The ankle joint should now be opened, the ligaments divided, and the dissection of the flap made from above downward; the thinness, softness and pliability of the tissues at this part facilitate the dissection. The dissection at the sides of the os calcis should be kept in advance of that at its posterior part which permits the division of the tendo-Achil-

lis. The separation of the flap from the plantar surface of the os calcis then becomes the least troublesome part of the dissection. The dissection should be carried so closely to the osseous surface as to separate the periosteum, and no vessels should be divided after the first incisions, except the nutrient vessels of the bone, as every touch of the knife can be plainly seen by the operator. As soon as the flap has been separated from its attachments, the soft tissues should be separated from the outer sides of the malleoli, and they should be sawed off obliquely, the saw being applied on the articular surface at their bases and the direction of the cuts made upward and outward. The articular surface of the tibia should be left uninjured. The dissection of the flap should be made with a short scalpel, and it is well to have more than one such knife, as cutting close to and sometimes into the os calcis readily spoils the edge of the scalpel.

"The anterior tibial artery may be readily found and secured by torsion, and but little trouble will be experienced in controlling the hemorrhage from the other vessels, as any bleeding will be from smaller vessels which may be controlled by the application of artery clamps or other means.

"A very important part of the operation is that of dressing the stump. If the directions have been closely followed the integument of the heel flap will be found to extend almost an inch above the lower ends of the bones when placed in position, the tissues in front of the ankle having retracted. Sutures should now be introduced about one-half an inch apart; they are not required to draw the parts together, but merely to keep the edges of the incision in line. Fine metallic sutures should be used and care taken to have the heel part of the flap directly under the bones of the leg; by using wire for sutures if portions of the skin are turned in or not approximated closely enough a suture may be tightened or relaxed as indications require. Strips of adhesive plaster should be passed over the ends of the stump between the sutures, which should make firm pressure on the flap and be secured to the leg above its middle, thus making any cavity requiring drainage impossible. The usual aseptic precautions having been observed and dressings applied, absolute healing may be expected in from two to four weeks, according to the care exercised in approximating the edges of the incision. The sutures may be removed in ten days and the alhesive plaster be allowed to remain a week longer."

You will note that Dr. Hamilton's operation differs from Dr. Symes' in that the anterior incision is slightly arched upward, and that the sole flap is a little larger than Symes'; that the joint is opened in front and the dissection made from above downward instead of from below upward as in Symes'. The greater ease with which this can be accomplished can be appreciated only after a trial of both methods. You will also note that the articular surface is left undisturbed, and not sawed off, as in Symes' operation, a point I wish to emphasize in all joint operations, and that adhesive strips are used over the stump, and that no drainage tube is used, points well worth remembering.

In conclusion I would sum up my remarks briefly as follows: Save all you can of the upper extremity, and all you can of the lower extremity, down to the junction of the middle and lower thirds of the leg. From this point to the shaft of the metatarsal bones, no amputation except Symes', done by Hamilton's method, should be done, until it has been more definitely proved that certain artificial limbs made for these operations are perfectly satisfactory.

J. B. MURDOCH, M. D.

IN MEMORIAM.

In presenting the accompanying portrait of our beloved ex-president, Dr. J. B. Murdoch of Pittsburg, Pa., we regret our inability to obtain an adequate obituary notice, but the following extract from a daily paper published in Pittsburg contains many facts which, perhaps, are not known to all of the members of the National Association of Railway Surgeons, who knew and admired Dr. Murdoch:

In the death of Dr. J. B. Murdoch, which occurred recently in this city, a wide circle of friends have suffered an irreparable loss. A man of such pronounced character cannot pass away without producing a vacancy which is profoundly felt by all who knew him. He leaves a most loving and sweet memory in the hearts of all who were acquainted with him. His was a singularly attractive nature—bright, cheerful, loyal and true—of whom it can truly be said, that, "None knew him but to love him,

none named him but to praise." To those who knew him it will mitigate their sorrow over his departure to know that his passing was painless and peaceful. Surrounded by his loving wife and children, the shadows lengthened, and the end was peace. "They thought him dying when he slept, and sleeping when he died."

Dr. Murdoch was born in Glasgow, Scotland, in 1830, and came with his father, who was a missionary of the Congregational Church, to Canada in 1833. He left Canada for the United States at the time of what is called "The Patriot War," and had since resided at Ballston, N. Y., Catskill, N. Y., Oswego, N. Y., and Pittsburg, Pa. He took his degree as a physician from the College of Physicians and Surgeons, New York City, in 1854. During the year 1855 he was surgeon of the steamship "North Star," of the Vanderbilt line of ocean steamers, and from 1856 till 1872 he practiced medicine in Oswego, N. Y., where he was a member of the Oswego County Medical Society, and its president in 1865; also a member of the New York State Medical Society. In 1861 Dr. Murdoch was made surgeon of the 24th Regiment New York State Volunteers. He was made Surgeon-in-Chief of his brigade, which consisted of the 14th, 22d, 24th and 30th regiments of New York Volunteers, and served as surgeon of the brigade at the battles of Bull Run, Falmouth, Rappahannock Station, Sulphur Springs, Groveton, South Mountain, Antietam, Gainesville, Manassas Plains, Fredericksburg and Chancellorville. On his return to Oswego, at the expiration of his term of service, he was made surgeon of the board of enrollment of the 22d district of New York, which position he held to the close of the war. During his residence at Pittsburg, Dr. Murdoch has been a member of the Allegheny County Medical Society, of which he was president in 1885, and a member of the Pennsylvania State Medical Society, of which he was president in 1888. He was made company surgeon of the Pittsburg, Cincinnati, Chicago & St. Louis Railway in 1876. He was attending surgeon at the Western Pennsylvania Hospital at Pittsburg, which position he held since 1872. He was one of the charter members of the National Association of Railway Surgeons, and was made its president at St. Louis in 1889. He was a clinical professor of surgery at the Western Pennsylvania Medical College, Pittsburg, and also dean of the college and president of the board of examiners for the 22d congressional district of Pennsylvania.

THE LATE J. B. MURDOCH, M. D.

Dr. Murdoch was a frequent contributor to medical journals of the country. Reports of his surgical clinics of the medical college have been made from year to year, and are published in the journal of the American Medical Association. His articles on the "Torsion of Arteries," for the arrest of hemorrhage, have been widely circulated, and it may be said that he did more to popularize this method than any other American surgeon.

A widow and five children survive him—three sons, Augustus P. Murdoch of Oswego, Dr. J. Moorehead Murdoch of Pittsburg, and William Murdoch, now a student at Yale University, and two daughters—Florence and Katherine.

While it is true that as a surgeon Dr. Murdoch will be chiefly remembered, of whom he stood in the front rank, to his immediate and best known friends his memory will be most

lovingly treasured as a man of broad nature and culture. His literary and scientific attainments were of a high order. He had a deep regard for truth, and although reserved in expressing his opinions, had a deeply religious nature, and had thought profoundly on all the questions of life and death. His trustful committal of himself to the hands of God and patient waiting for his summons were beautiful to witness. With the calmness, self-poise and bravery of the skillful physicians, he possessed a profoundly emotional and sympathetic nature. He was a "born poet," though he never "lisped in numbers" or expressed himself otherwise than in prose. Robert Burns, Sir Walter Scott and William Shakespeare were his favorite authors, from whom he loved to repeat from memory by the hour together. From his Scottish ancestors he inherited that ardent affection for "Auld Scotia," "The Land of the Mountain and the Flood," which is the characteristic trait of Scotchmen. As such he took a deep interest in the books of "Ian Maclaren," "The Days of Auld Lang Syne," and "By the Bonnie Brier Bush," which were a solace to him in his last hours. Dr. John Brown of Edinburgh, and Dr. Maclure of Drumtochtie, were characters in which he delighted, and with which his particular friends will ever associate him.

SIMULATION OF NERVOUS DISORDERS FOLLOWING ACCIDENTS.

By Pearce Bailey, M. D.,

Consulting Neurologist to St. Luke's Hospital. Assistant in Neurology, Columbia College; Attending Physician to the Alms House, Work House and Incurable Hospitals, New York.

At the present time persons who suffer injury in railway or other accidents rarely neglect to demand of the companies, or individuals responsible, liberal compensation. In the entering of such claims, it is the chance of success rather than the extent of injury or the social position of the claimant, which seems to exert the most important influence. At first, no thought of financial recompense may occur to the injured person. Few, however, are so poor in friends that they escape kindly suggestions as to the possibility of turning misfortune to good account. If the accident were noticed in the daily papers the patient will soon have his rights explained to him by enterprising representatives of the bar. A man was recently injured in New York late in the afternoon. Before eleven o'clock the next morning eight "accident lawyers" had called at the hospital to see him. The last hours of the unfortunate man were passed in listening to the arguments of the attorneys who were going to secure damages for him if they got the chance.

None will deny the justice of claims for damages for injuries received through negligence of persons responsible. And if a man does not know what his rights are he ought to be told. But with the enormous increase in the past few years of the "accident business," it would be out of harmony with the times if all of the claims which are entered for injuries received were genuine. In claims for visible physical injuries there is little chance for fraud. A man cannot simulate a broken leg. Few are so mercenary or so poor that they will inflict upon themselves serious wounds in a way which will permit the mode of occurrence of such injuries to be misinterpreted. With the disorders of the nervous system the case is somewhat different. Many symptoms of nervous disease are entirely subjective, and permit no objective proof. To be reasonably certain of the existence of headache or backache or inability to keep at work, the physician must often be convinced of the veracity of the person who complains of them. Such symptoms as these are often genuine and cause great discomfort to persons who have been in railway accidents. How frequently these and similar subjective evidences of impaired nervous function are invented or magnified by the patient is a matter somewhat difficult to determine.

Claim agents and corporation lawyers believe that in the majority of accident nervous cases the symptoms are either feigned or grossly exaggerated. Physicians themselves are not unanimous as to the frequency with which these symptoms are real. It is not surprising that a claim agent, whose medical knowledge is, at best, superficial, and who is so constantly a witness of attempted fraud, should be skeptical as to the justice of claims based upon symptoms of indefinite character. Physicians, on the other hand, know that neurasthenia is a morbid condition largely beyond the patient's control, and they believe it less frequently feigned than is supposed by non-medical railway officials. This opinion is based upon the observation of persons who develop functional nervous symptoms as the result of accidents, and who, even when the question of claim or litigation does not enter at all, remain incapacitated for work during months or years. The

different opinions on this subject held by physicians and corporation officers may be accounted for by the different points of view. A claim agent does not appreciate the fact that traumatic neurasthenia may be a very obstinate and distressing affection when the patient asks for nothing but a restoration to health; and physicians forget that many impostors are so clumsy in their descriptions of disease that they are turned away from the claim agency without being referred to a medical man.

Physicians believe that the number of absolute simulators among the claimants who are referred for medical examination is not large. Trifling symptoms may be exaggerated, or some statements made which are not true, but in the large majority of cases there actually exists some disability or discomfort upon which the claim is based.

Large sums are paid annually for damages by railway and other companies. Corporations usually prefer to settle small claims than to defend suits. These facts tempt many to try their hand at increasing their capital by feigning disease as the result of accident. The adventures of the Freeman family, which have been recorded by the Association of Railway Claim Agents in a little pamphlet entitled, "Paralysis as a Fine Art," furnish the best proof that absolute fraud may not only be attempted, but be eminently successful.

The Freeman family consisted of father, mother and eight children, Polish or English Jews, all of unsavory reputation. There is no definite information regarding the frauds of the male members of the family, but the mother, Mary Freeman, and the two daughters, Jennie and Fannie, between January, 1893, and December, 1894, entered no fewer than nine claims for damages against railway companies. That the last claim was fraudulent and the pretenses false, each and all of these three women swore before a notary in Chicago at the time of their final exposure. There is convincing proof also that all previous claims had been equally fictitious. An outline of the individual frauds is as follows:

Jennie Freeman, 18 or 20 years of age, of questionable morality and usually on good terms with some physician or attorney. Has been arrested for theft.

I. January 9, 1893. Claim on the Chicago City Railway Company. Collision between two cable cars. "Alleged total paralysis from thighs down, loss of sensation, want of control of the bowels and urinary organs, and pretended that she was a cripple for life. The company's physician thought the girl was shamming, although the symptoms were so closely simulated that it was apparently a real case of paralysis. Company paid $500, and Miss Jennie is said to have recovered a few days after the damages were paid."

II. October 5, 1893. Claim on Manhattan Elevated Railway Company of New York, for injuries received by falling against the car door of a Second avenue train while rounding the curve at Twenty-third street. Settlement of $125 to Jennie Freeman and $100 to her physician.

III. May 16, 1894. Claim on Boston and Maine Railway Company of having been injured by slipping on a banana peel while stepping out of a car at Prospect Hill station. She claimed that she had injured her back and other portions of her body by striking against the end of a seat. One hundred and twenty-five dollars was allowed in respect of these injuries.

IV. June 28, 1894. Claim on Illinois Central Railroad Company for injury received by being thrown against the back of a seat through the sudden stopping of a train. She alleged total insensibility of the lower part of the body, practically amounting to paralysis. Had a sore on her backbone, immediately above the top of the corsets. Alleged an inability to control her bowels, etc. Was settled with for $200.

V. September 10, 1894. Alleged to have fallen from her seat while rounding a curve on one of the lines of the West Chicago Street Railway and represented to the company through her mother that she was paralyzed. Fraud discovered by the claim agent.

Mary Freeman (the mother), aged about 43 years, dirty, "a veritable Fagin unsexed." Has been arrested several times for theft.

I. September 11, 1894. Claim on Chicago City Railway Company for injuries caused to her right arm by the sudden starting of a car. She received $100.

Fannie Freeman, aged 18. "Has little to say and acts the part of the paralyzed lady." Has been arrested for theft.

I. April 20, 1894. Claimed to have

been injured by slipping on a banana peel on a West End Street Railway Company's car in Boston. Complained of symptoms of paralysis of motion and sensation from waist down and that she was unable to control her bladder and rectum. Scrapes along the spine. Received $325 or $425.

II. June 6, 1894. Claim on N. Y., N. H. & H. R. R. Co. at Boston. This case was an exact reproduction of the preceding, even to the claimant's maintaining that it was "her first accident." But she was unfortunate in being visited by the same physician who had seen her a month previously for the West End Street Railway Company. The physician this time recognized the fraud, which he had failed to do before.

III. December 24, 1894. Fannie Freeman made claim. through her mother, on the Chicago, Rock Island & Pacific Railway Company, for injuries received by falling on her back in one of the company's cars. She alleged entire inability to move the legs and entire loss of sensation. There were so many suspicious circumstances about the case that the family was watched and the alleged cripple was seen to walk perfectly well. At the time of her examination "an unexpected test of raising the foot in the air, caused it (contrary to all custom in well regulated paralyzed legs) to stop there, though tests of physical force were applied and successfully withstood."

It is not probable that such absolute frauds as these are of frequent occurrence. In the larger number of cases the claimant has received some injury, although he may very much exaggerate its importance. Whoever tries to counterfeit a symptom which has absolutely no foundation in fact is surrounded by many difficulties. Objective nervous symptoms are particularly difficult of voluntary creation. He is the clever simulator who limits himself to assertions of pain in the back, headache, inability to keep his attention on his work and similar indefinite evidences of nervous disorder. Such complaints as these may not reveal themselves by any signs accessible to the examiner; whether they are true or false may be a matter difficult to determine without information from outside sources. But when a claimant undertakes to sham paralysis, or loss of sensation or inability to control the bladder or rectum the case is different. Such symptoms as these are indicative of profound disturbance of nervous function, and to feign them well the simulator must not only be familiar with general medicine, but must also have devoted some little attention to the study of the diseases of the nervous system. And even if a claimant had an intimate familiarity with the symptoms of nervous disease, I very much doubt if he could even then imitate them with sufficient cleverness to deceive a painstaking and skillful physician. Serious injuries to the nervous system which occur as a result of accident are manifested by definite groups of symptoms. Traumatic paraplegia is almost invariably associated with loss of sensation in the legs. Anæsthesia, as a symptom of organic lesion, is usually accompanied with paralysis and other associated symptoms. Loss of control of the sphincters is almost unexceptionally combined with paralysis of the legs. To successfully simulate any one of these symptoms implies that some of the others must be simulated also; and to simulate two different things at the same time necessitates a greater concentration of the attention than most people are capable of. Let us take an example: a man alleges to be paralyzed for motion and sensation, from the waist down, as a result of a fall on the back. Upon examination he is asked to move the legs and he declares he cannot do so. The legs are lifted up and fall heavily again to the bed. So far the evidences of motor paralysis may be fairly good. Sensation is then tested and the claimant gives no expressions of pain when pricked with a pin. The examiner then returns to try the motor power and while the patient says he is trying to lift the legs, the physician pricks him sharply with the pin. In this way the person under examination is taken off his guard. If the anæsthesia were feigned, the patient might be able to repress expressions of painful sensation when his attention was entirely devoted to that end, but when his attention is drawn to other things, as in keeping up the imposture of motor paralysis, some evidence of perception of painful irritation will usually escape him before he can sufficiently collect himself to control it. Feigned loss of muscular power may often be detected in similar ways. Fannie Freeman, when her leg was lifted up, forgot to let it fall, but held it in the air, thus furnishing a convincing proof of voluntary motor power.

Disease changes in the reflexes cannot be conterfeited.

If the bladder is paralyzed, the meatus urinarius will constantly be wet. For obvious reasons it is generally impracticable to examine the genito-urinary organs if the claimant is a woman. But if there is true incontinence of urine, there will certainly be a strong urinary smell about the bed and about the patient, The absence of this odor should excite suspicion in regard to any case in which urinary incontinence was alleged. Paralysis of the sphincter ani may easily be recognized by digital examination. In paralysis, the anal opening is large and the soft muscle does not contract around the finger of the examiner.

These means for the detection of simulation are often unnecessary. The genuineness of any given case may usually be determined by a brief review of clinical possibilities. In ordinary injuries the lesion is either organic or functional. If organic, it is either peripheral or central. If peripheral, it rarely happens that all the nerves of an extremity are injured at one time and bilateral symmetrical nerve injuries almost never occur. If one or two nerves only are injured, the paralysis will be limited to the muscles supplied by them. Sensory disturbances are rarely prominent in injuries to peripheral nerves. If the case is of central organic character, whether cerebral or spinal, there will be considerable constitutional disturbance. Organic cerebral lesions are easy of recognition. In spinal lesions it is well to remember that the different segments of the spinal cord have fairly well recognized functions, by the loss of which spinal injury may be, not only recognized, but localized. The anæsthesia which results from spinal lesions is usually very profound, and its distribution is entirely different from that caused by injury to the peripheral nerves or that observed in hysteria. Also, paralysis resulting from injury to the spinal cord is rapidly followed by atrophy, and the reaction of degeneration in the paralyzed muscles, and notable disturbances of trophic function of the skin.

If the case is functional there are greater difficulties in determining just how far the symptoms are exaggerated or feigned. The two functional disorders which come most frequently to the physician's notice in accident cases are neurasthenia and hysteria, although there are a few rare forms of traumatic nervous disease which cannot satisfactorily be classed with either of these two conditions. Traumatic neurasthenia is the "Railway Spine" of Erichsen, and in it the integrity of nervous function is impaired. The condition of nervous exhaustion is unquestionably real, but because nearly all its symptoms are subjective, it is sometimes difficult to be certain (in a case in which there is a motive for simulation), whether the symptoms are entirely genuine or not. But even in most of the cases of traumatic neurasthenia the experienced physician can usually tell when the symptoms are entirely feigned, although it must be admitted that sometimes corroborative information from outside sources is necessary for a certain diagnosis.

The other functional nervous disorder following accidents is hysteria. Hysteria is not, as many seem to think, a disordered mixture of deception and exaggeration, but is a well recognized disease, governed by definite laws. It is the most difficult disease of all to simulate, as its symptoms are so various. The visual disturbances, the paralysis and anæsthesia of hysteria are different from similar symptoms due to other causes, and the mental state in hysteria is characteristic. Traumatic hysteria is a comparatively rare affection in this country, but its existence should be remembered, in order that a patient suffering from it should not be catalogued as an impostor.

60 West Fiftieth street.

VENESECTION; ITS THERAPEUTICAL VALUE IN DISEASE AND INJURY.*

By J. W. Young, M. D., of Bloomfield, Ia.

Up to fifty years ago nearly all teachers of medicine and surgery held that blood-letting was a powerful agent in controlling inflammation and greatly assisted in prolonging life and relieving suffering. Indeed it was taught by most of the forefathers in the healing art that in all acute diseases and in the course of many of the chronic ones the abstraction of blood was the main thing to do when trying to cure or bring relief. If the physician did not do it

* Read before the annual meeting of Wabash Railroad Surgeons at St. Louis, Mo., Nov. 5, 1896.

himself he called a barber and instructed him to take so many ounces of blood, or till fainting occurred, and if the patient was not better the next day the performance was repeated. From the time of Hippocrates until the middle of this century our most learned and scholarly men wove theories in support of this wholesale loss of blood, and the patients, "Though they be kings or peasants," were satisfied their lives were prolonged and that they were cured of their maladies as well as that the pains of their diseases were relieved. The belief became so fixed in the minds of the people that many persons who made no pretense to medical knowledge purchased the old spring lancet and bled their neighbors when feeling indisposed to any extent, with a view of warding off impending disease. In my boyhood days, I remember that many old persons would call on one of these amateur bleeders every fall and spring to have the bad blood taken out of them, with a view of rendering their bodies less liable to disease. Before this era of blood-letting came to a close, Von Helmont was forced to exclaim that he believed "a bloody Moloch presided in all the chairs of medicine."

Now all is changed! Most of our text-books speak of bleeding as obsolete and as a mischievous and dangerous proceeding. A few only recommending this remedy in a very few conditions in disease, and write about it as though they were afraid of the ridicule of their fellows.

I am of the opinion that bleeding is seldom necessary, but hold that there are a few conditions in which patients will do better, and their lives may be saved and prolonged by the abstraction of blood. I am also of the opinion that the old masters in our profession, certainly at times, did do good by blood-letting and could see the benefit derived therefrom in certain conditions, or else the people or the doctors would have called a halt long before they did; also if bleeding did cure and bring relief one hundred years ago, the same causes will bring the same results now under similar conditions.

Nearly all writers of the present claim that we have a remedy to put into the body, either in the digestive canal, or in the tissues, or local applications to the surface, that will do as much in abnormal conditions, and fully take the place of the "barbarous use of the lancet." While the above is true in general, yet the older members of the profession who have used blood-letting in the treatment of disease will tell you that there are a few conditions found in a general practice in which the use of phlebotomy, cupping or leeching, seemed more satisfactory than any modern mode of treatment.

If you ask me my reasons for the abstraction of blood in pathological conditions, I will say:

First: It relieves the pressure of the blood in the capillary system in every tissue, including the brain, liver, spleen, kidneys, etc., in exact proportion to the amount taken.

Second: The relief of pressure to a proper extent in the brain and nervous system causes, through the great sympathetic system, a softer and slower action of the heart, and a consequent reduction of temperature.

Third: It removes from the blood a part of certain foreign matters, such as the materies morbi of rheumatism and uremia, ptomaines, and possibly microbes.

Fourth: It promotes and stimulates absorption from the tissues by the lessened pressure from loss of blood, thereby relieving congestions, as seen in the relief of acute pleurisy, rheumatism, concussion of the brain, and in any condition where there is migration of the corpuscles and serum out of the vessels, into the tissues, after an injury.

Fifth: Certain individuals seem to have more blood than is necessary for their well-being, and it is a known fact that after a loss of a certain amount of this fluid in most systems there is increased activity in blood-making from fluids and foods, as well as from all tissues of the body, thus increasing vital action in every part.

Sixth: There are many known conditions of the body in which the abstraction of blood will do positive injury, and should be considered bad practice

In a general practice of twenty-five years I have used blood-letting to some extent, and so far I have never had cause to regret the loss of this vital fluid in any condition in which I have used the lancet.

I now recall a number of eclamptic cases, in young, strong women, nearly all in first pregnancies; patients with short, thick necks, full blooded, with dropsical feet; and after the first convulsion I invariably took from the arm of the unconscious women from 16 to 30 ounces of blood. By this means I got rid of some of

the uremic poison, and relieved the delicate structure of the brain of some pressure and congestion.

I always found the next convulsion delayed and the condition is then more amenable to the usual and recognized treatment of the eclamptic state. In watching these cases to recovery or death, I am certain the abstraction of a proper amount of blood assisted materially in lessening the mortality of the 12 cases of this affliction which I have seen with but one death.

Acute pleurisy, after exposure and fatigue in the strong and robust subject, is another condition in which I have often brought relief by abstraction of 30 ounces of blood. Often by the time I had bandaged the arm, after a full bleeding in an acute pleurisy, my patient would tell me he could breathe without pain, and in a day or two would be as well as usual. In certain cases of pleurisy, after effusion had taken place and fluid in the chest was plainly evident, by percussion and the hypodermic needle, a loss of a proper amount of blood, in connection with saline cathartics, has caused a rapid absorption of the fluid, and a normal condition of the chest has resulted in less than ten days.

The philosophy of these results, by blood-letting in pleurisy, is simply relieving the blood pressure, thereby changing the exosmotic condition of the capillary system in the pleura to endosmotic; the current is changed from outward into the pleura to inward into the vessels.

In sthenic pneumonia, in robust individuals, when the skin had the dusky, purple appearance, and breathing was labored, I have often taken 20 ounces of blood, and at once brought great relief, both to breathing and pain, and have always thought my cases ran through the regular stages in a milder manner, and the mortality would be less.

My conviction in regard to blood-letting is that too great a loss of blood in any self limited disease may do damage, and, in fact, in all self-limited zymotic diseases, great caution must be exercised in taking any amount of blood. Good blood is the food for all tissues. and when its nourishing property is destroyed to a certain extent, either by lack of assimilation of food, as seen in continued fever, or loss of blood by the lancet, death must take place.

In congestive or hemorrhagic apoplexy I have often taken a moderate amount of blood from the arm and have never had cause to regret so doing. It seemed to put a stop to further hemorrhage and set up absorption of effusion or clot. In violent concussions of the brain, when the patient has a hot head, with muttering delirium or confusion of ideas, I have found a copious bleeding from the arm to materially assist nature in restoring order to the injured brain.

I will say, in conclusion, great care and good judgment must be exercised in resorting to this remedy in disease or injury. A good rule to follow is to extract blood only from persons who seem to have abundance of this fluid, and in conditions where experience has taught us it will do more good than any other remedy at the time, believing that blood-letting acts mechanically in part, by relieving pressure in the capillaries, and thereby causing absorption of obnoxious material from the tissues.

Resection of Nearly Eleven Feet of Small Intestine in a Boy Eight Years Old.

Dr. Ruggi has reported the case of a boy who was struck on the abdomen by the car of a large swing, and thrown into the water about forty feet distant. For two weeks he had some tenderness in the abdomen, but no other symptoms. He then showed signs of obstruction. The abdomen was opened, and a loop of intestines was found constricted by a band of omentum. He improved for a time, but signs of obstruction returned in more pronounced form, and the wound was reopened. The intestine was found stenosed at the point where the contricting band had been divided. This was freed, and for a time the boy again had relief, but complained, as he had before the first operation, most bitterly of hunger, crying night and day, in spite of the fact that large quantities of food were given, in addition to rectal feeding. Obstruction again returning, it was decided to again open the abdomen. A large mass of intestine was found adherent to the abdominal wall. On attempting to free this, it was dicovered that a large extent of bowel had been stripped of its mesentery. Dr. Ruggi determined to resect these portions and removed successively ten feet nine inches. The lowest incision was six inches from the ileo-cæcal valve. The ends were brought together by silk sutures. In a few days the boy was again crying for food. Gradually, however, the hunger lessened, and in five weeks he was discharged cured. At the time of report, fifteen months later, he was in perfect health.—The Canadian Practitioner.

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MUTIPLICITY OF MEDICAL ASSOCIATIONS.

It is a rule in the business world that a great volume of trade or great profits in some particular line is a great incentive to competition. It matters not how necessary the business nor what sacrifice of time and means that the successful man has made to establish it, he is always liable to have one or several men step in to share the lucrative field with him. The situation is then one of the survival of the fittest, or, as is frequently the case, the failure of all, with the consequent destruction of what was a promising business.

The present position of Medical Associations is quite analogous. Medicine is a great and growing science, and a vast army of men are devotees thereto. How natural that we should need medical societies and that men should meet each other and enjoy and profit by the interchange of social friendship and scientific thought. Likewise how natural that all societies and organizations which are capable of doing great good and wielding a mighty power in the community are often destroyed or rendered practically useless by needless and destructive duplication.

The scope of the science and art of medicine has so broadened that specialties have been evolved; the whole field is too great to be grasped by single minds. With the development of specialties we find new medical societies organized, until we now have, in addition to the local, state and national medical associations, which pretend to embrace the whole scope of our professional work, similar classes of societies devoted to Surgery, Orthopædics, Gynecology, Ophthalmology, Dermatology, Laryngology, Electrology, Pædiatics, Neurology, Homeopathy, Eclecticism, Microscopy, etc., etc., including Railway Surgery. The literary productions of the medical world are, in fact, so great that even the great American Medical Association is conducted under the heads of various specialties.

The great needs of the day are not more medical societies, but fewer and better ones; not more medical journals to spread the light of modern thought and practice, but fewer, cleaner and more select ones; not more medical papers for our medical societies, but more complete and original ones.

Our attention is called to this subject by the excellent paper by Dr. J. W. Wright of Columbus, which appears in this issue. The paper unquestionably presents the unbiased views of an earnest man. We are willing to accept much of the doctor's statement but believe other points will bear further consideration.

The statement, for instance, that "Any good surgeon is a good railway surgeon," cannot go unchallenged, but on the contrary we must insist that many good general surgeons are poor railway surgeons. It is true railway surgery is included in general surgery, and in many particulars is identical with other traumatic surgery, but there is a vital difference: First, persons injured on railways put a pecuniary element into every injury, regardless of circumstances; secondly, the patient is placed in the care of the company surgeon; thirdly, the surgeon is selected by the

company and not by the patient; fourthly, the company and not the injured person pays the bills, and, fifthly, the employer of the surgeon and the payer of the bills is the party expected to remunerate the patient for loss of time, effects of injury, etc. For these reasons the railway surgeon requires an inclination to do and the ability to do more than the ordinary surgeon. In addition, there are great moral and sanitary problems connected with the operations of railways which interested surgeons alone can handle. There is great good in local "company" associations, as the surgeons of the company learn to know each other and better and more satisfactory work is done for the company, and the injured. Likewise, there is great good in a national association of railway surgeons, which brings together the surgeons of all the roads, and from all parts of the nation to discuss the subjects of vital interest to all railway companies and railway surgeons in common.

The great bugaboo of railway accidents, Ericson's Disease or Railway Spine, was made the subject of special study by the National Association of Railway Surgeons a few years since, and the facts and reasoning there presented were of such an overwhelmingly, convincing character that John Ericson, the author of that famous monograph which has cost the railway companies of this country so many millions of dollars, was compelled to admit that spinal concussion per se was practically an impossibility. In this one act the National Association of Railway Surgeons did more for the advancement of surgery as it applies to railway injuries than the general medical associations have ever or would ever have accomplished. Their special interest in railway surgery or surgery following railway injuries led to the final result.

The problem involved in the care of railway employes has been solved by the Railway Hospital system. The hospital appointments are like those of any other hospital, but the system of care is peculiar, economical, and eminently satisfactory.

As railway surgeons are not concerned in politics there would seem to be no reason whatever for the existence of district or state organizations for the consideration of topics which had better be considered by the company or national organizations.

The greatest benefit of company national railway organizations is derived by the companies, and they should and usually do manifest their appreciation by granting the same courtesies that they do to other employes. The National Association of Railway Surgeons was and is the largest body of surgeons in the world, and should, therefore, be able to do much for the advancement of general as well as railway surgery. In the past there has been great need for the exercise of the principles of common sense, a condition which has not always characterized the action of some of our members, and we are of the opinion that the problem of passes can be solved by the same application. Railway companies should not be asked to give members of the National Association of Railway Surgeons or local organizations something for nothing. Give them thought and time, and have the meetings characterized by good, solid, scientific worth, and railway managements will be glad to render all possible assistance.

AMPUTATIONS PROTHETICALLY CONSIDERED.

We desire to call the attention of our readers to Dr. Thorne's article upon this interesting subject, which appears in other columns of this issue.

The subject is handled in a masterly manner, and aside from the condemnation of amputations in the foot and some of the principles propounded, we wish to commend the teachings therein presented.

The subject of amputations is a vital one; in fact, it is considered by many the most vital one in traumatic surgery. It is surely the most frequent one in railway practice and, therefore, the special importance to us. To know when to operate is a difficult question to decide, and having decided when and possibly where to amputate, the technical problem of how to amputate demands consideration.

The author has given us a brief account of when to amputate to obtain the most prothetic relief, but as there is a large percentage of the injured who are not able to procure the prothetic apparatus, it is indeed a question whether or not the tarsal amputations of the foot should have a place in our considerations. The great principle which should apply in all

amputations in both upper and lower extremities, is to save all we can, providing it can be rendered useful. It is our belief that by the careful anatomic attachment of the severed opposing tendons, the amputations in the foot can be made useful to a marked degree, and that they are especially indicated for laboring men.

The article contains a most favorable report of our first vice-president's modification of Szme's amputation, which we desire to indorse as being a great improvement on the original operation.

The various practical hints inserted will certainly be of value to those who have not given this subjct special thought and study.

EXPLORATORY INCISION IN THE TREATMENT OF CLOSED FRACTURES AND DISLOCATIONS.

Among the Extracts and Abstracts of the present issue we republish an article by Dr. John B. Roberts of Philadelphia upon the above topic, which recently appeared in the Medical News. The old practice is attacked in a vigorous and yet logical and most convincing manner. The conclusions presented are in general good and acceptable. The treatment is not advised in all simple fractures and dislocations, but in a small selected class. The author says: "My advocacy of cutting down upon closed fractures is limited to cases in which ignorance of the exact lesion, impossibility of reduction, imperfect immobilization, or failure to deal efficiently with complicating lesions, makes the incision the less of two evils." The same procedure is advised in dislocations, which do not readily yield to manipulation under anæsthesia.

The position taken by Dr. Roberts is certainly both conservative and progressive, and when it is possible to carry the treatment out under those absolutely aseptic conditions which he so strongly emphasizes, it should undoubtedly be the practice in the class of cases referred to. Unfortunately, those favorable conditions are not omnipresent, and then the dangers of sepsis will make the two propositions nearer equal—and, therefore, render difficult the choice of the appropriate treatment.

Extracts and Abstracts.

A Review of the Surgery of the Peritoneum.

Treves (British Medical Journal, October 31, 1896) says that within the last few years the tendency of many surgeons has been toward the development of an elaborate technique to attain the so-called "strict antiseptic precaution," and the object gained, although of no practical value, has sacrificed much which should have been applied to the actual safety of the patient.

The surgical ritualists appeal to the infallible tests of the bacteriological laboratory, and bring forth, as conclusive evidence, an array of cultivations and inoculated tubes. Most English surgeons, on the other hand, are content to appeal to the test of the patient, and to bring forth records of results.

The work in the operating theater comes up for criticism a week or more after it is done. An operator in fishing boots, nurses with their hands and arms wrapped up in special towels, and a hose playing about the floor of the theater, may form an impressive sight, but to what degree does it bear upon the interest of the patient?

There is the amplest evidence that these extravagant and almost grotesque preparations for the operation are unnecessary; for that evidence demonstrates that such formulæ give in no one class of operations a better result than do the simpler methods with which we are familiar.

At present the actual handling of knives and forceps is overwhelmed by the dexterous disposal of the basin and the soap dish.

The technique, as carried out by the author, is as follows: The operating room is clean and free from dust, and there is nothing peculiar in the construction. The table is of wood. It is not bacteriologically clean, but it is handy to the surgeon and comfortable for the patient, two points worthy of some consideration. Some time before the patient enters the operating room the skin of the abdomen is shaved, well washed with soap and water and then with ether, and is finally covered with a thick compress soaked in a 1:20 carbolic solution, which is kept in position at least five hours before the operation. The surgeon is clean, but does not parade his cleanliness. The mackintoshes and blankets which envelop the patient are, in a domestic sense, clean. The towels which cover the body in the vicinity of the operation area are taken direct from the sterilizer.

The instruments are sterilized by boiling and kept in trays with 1:20 carbolic solution,

and before using this solution is diluted by boiled water.

The only sponges the author uses, made of Gangee tissue, are allowed to soak for twenty-four hours in 1:20 carbolic solution.

The author takes as a test of this technique the operation for appendicitis, which he has performed 150 times with but one death.

The character of the dressing used after the operation is of little or no moment. The wound is dried and well dusted with iodoform.

The iodoform is retained in place by a pad of wool and a binder.

The fact that iodoform is swarming with microbes may disturb the bacterially-minded surgeon, but it disturbs neither the wound nor the patient.

Peritonitis and the Treatment of Peritonitis.—The evidence is practically complete which demonstrates that all forms of peritonitis are septic and due to infecting micro-organisms. The peritonitis ascribed to the pneumococcus has not yet emerged from the confusion of a bacteriologic squabble. Idiopathic peritonitis, which was at one time regarded as a definite and common disorder, has now, indeed, ceased to exist.

The constitutional symptoms of peritonitis are, in the main, those of septicemia, and it is from blood poisoning and not from inflammatory disturbances that the subject of peritonitis dies. When peritonitis is developed away from what is termed the small intestine area, it is apt to be localized. The surgical treatment of this form has not been most successful. On the other hand, peritonitis in the small intestine area is rapidly diffused, and is as rapidly attended with septicemic symptoms. In this form the operative results have not been so brilliant, and it is evident that the treatment of this terrible complication must still incline toward that desirable prevention which is better than cure.

Excellent have been the results obtained in tuberculous peritonitis of almost all grades. The examination of some 300 recorded cases, treated by abdominal section, shows that a prospect of cure may be expected in over 60 per cent of the instances.

The highest percentage of cures has been attained when the abdomen has been neither flushed out nor drained, but when the exudation has been merely evacuated and the parietal wound closed. With regard to the general management of the peritoneum in operative cases great care should be taken to avoid injuring the membrane, and it is much better to allow a few ounces of a harmless effusion to remain than to remove it by reckless flushing and sponging.

Perityphlitis.—The author denies the existence of the so-called appendicular colic. It is assumed by those who have been captivated by this term that fæcal particles or foreign substances enter the appendix and cause intense muscular contraction of the organ. In opposition to this assumption it may be pointed out in the first place that fæcal particles are remarkably well tolerated in the appendix. In the next place the intensity of the colic must depend upon the power of the irritated muscle, and the supply of sensory nerves to the disturbed part. It so happens that the muscular structure of the appendix is of the feeblest character. Moreover, the actual nerve supply of the organ is relatively poor.

It is needless to say that the great majority of examples of perityphlitis depend upon trouble in the appendix; but the author is convinced that now and then the peritonitis is started by mischief in the cecum itself, the appendix being sound.

In spite of all argument the etiology of perityphlitis is very simple. A catarrh leading to ulceration would appear to be the commonest factor, and it is this condition which precedes the stricture of the appendix. The author assumes that the origin of the appendix calculus is exactly identical with that of the rhinolith.

Foreign bodies, seeds and fruit stones play practically no part in the etiology of perityphlitis.

As regards the question of the surgical treatment, Treves says it is seldom necessary to operate before the fifth day. He condemns the practice of immediate operation, as there is no sound basis for this procedure in either the pathology or the clinical prospects of the affection. It is true that some intense attacks end in death in forty-eight hours; these terrible phases of the malady are exceedingly rare on the one hand, and are not difficult to recognize on the other.

When an abscess is evident or suspected, the locality of the incision must be determined by the area of dullness and of the resistance. The incision should be free; the abscess cavity is gently examined as to its position and extent. The diverticula can be cautiously opened up with the finger. No elaborate search should be made for the appendix. Such search means risk to the frail abscess wall. Should the diseased appendix actually present itself, it can be ligated and taken away.

The high mortality accredited to this operation depends upon the blind resolve to excise the appendix at all hazards. The operation is concerned with the evacuation of an abscess, and those cases do best in which the least is done. As for drainage nothing acts better than iodoform gauze.

The treatment of the diseased appendix involves no new surgical principles and calls for no labored invention. The treatment of the abscess is based upon those great general prin-

ciples which underlie the treatment of all abscesses, and the removal of the little organ demands no departure from the accepted procedures which belong to the common lore of surgery.

Exploratory Incision in the Treatment of Closed Fractures and Dislocations.*

By John B. Roberts, M. D., of Philadelphia, Pa.

Complete reduction, exact restitution of contour, and perfect retention, are the conditions of full success in the treatment of fractures. Deformity, impairment of articular movement, non-union and neuralgic pain are remote results of failure to obtain these desirable conditions. Since aseptic surgery has made possible the prevention of infective inflammations in most open fractures, it is quite probable that better reduction, coaptation and retention result in open than in closed fractures of the same grade and character of bony lesion.

The recent application of skiagraphy to surgical diagnosis has proved that fractures seemingly well reduced and properly dressed with splints may be the seat of considerable deviation from the normal skeletal relations. At the Polyclinic Hospital recently, for example, a fracture of the middle of the radius, supposed to be well reduced and dressed, was shown, by the use of the Röntgen ray, while the splints were in position, to have its fragments overlapping to the extent of about half an inch. In another case a painful swelling at the seat of a former injury to the fibula was discovered to be due to unrecognized non-union at that point. The rigidity of the tibia prevented the lack of union of the smaller bone geing detected, but skiagraphy showed it plainly.

Nearly twelve years ago I advocated conversion of closed fractures of the cranium into open fractures by incision of the scalp, whenever uncertainty as to the character of the cranial lesion was prejudicial to intelligent treatment.[1] As part of my argument I said that no surgeon would hesitate to convert a closed recent fracture of the thigh or leg into an open one if it were impossible to replace fragments which were threatening life. I admitted that closed wounds are less serious than open ones, but asserted that with modern surgical methods, open wounds are preferable to closed wounds having inherent dangers that cannot be recognized without opening them. Further consideration and experience convinced me that this method should be extended to fractures in the limbs, even when life was not threatened, if obscurity of lesion or difficulty in reduction jeopardized function. Accordingly, a few years later,[2] I gave it as my opinion that recent fractures of the lower end of the humerus might with propriety be subjected to exploratory aseptic incision, if satisfactory coaptation was not obtainable under anæsthesia; and that such action, though it involved opening the elbow joint, was as legitimate in properly selected cases as the recognized exploratory incision made in obscure abdominal conditions.

My belief in the propriety and value of exposure of the fragments in a certain limited number of closed fractures has been strengthened as years have passed. The method, which I do not claim as novel, has, however, not been sufficiently impressed upon the profession to cause its adoption by surgeons in general. Allis of Philadelphia has advocated it[3] in rebellious fractures of the upper third of the shaft of the femur, in order to apply steel screws for retentive purposes. In England, Lane has employed it[4] in oblique fractures of the tibia and fibula near the ankle, for the same reason. McBurney[5] and others have resorted to it in fracture of the upper end of the humerus complicated with dislocation. Dennis[6] and Ricard[7] also approve of it in cases where there is difficulty in obtaining correct apposition of fractures. Other writers may have mentioned the subject, and cases may have been occasionally reported, but, except in fractures of the cranium and patella, I think that most surgeons are more apt to be satisfied with imperfect results than to advise immediate exposure of the fragments before the patient comes out of the anæsthesia induced for the purpose of examining and reducing the fracture.

This attitude of the profession in general has been evident in societies at which I have incidentally mentioned my views;[8] and is due to conservatism bred by the fear of open fractures felt by all in the pre-antiseptic period of surgery. The method has suggested itself to many practical surgeons, but it needs to be ever before our minds as a legitimate procedure.

My advocacy of cutting down upon closed fractures is limited to cases in which ignorance of the exact lesion, impossibility of reduction, imperfect immobilization, or failure to deal efficiently with complicating lesions makes the incision the less of two evils. An aseptic incision is almost devoid of risk, even if it opens a joint; but that slight risk should not be added to the patient's burdens unless the probability of deformity, of interference with joint movements or other functions, of pain, of paralysis, or of non-union justify it. Here, as in all departments of surgery, it is the surgeon's duty to exercise care and good judgment in selecting the method of treatment. To illustrate my meaning I cite fracture of the patella, which I have never treated by incision and suture of the

* Prepared for the second Pan American Medical Congress November, 1896.

bone, because I have thus far always been able to satisfactorily bring the fragments together by hooks, subcutaneous suture, or splint. In one or two instances I have almost decided to lay open the overlying tissues in order to obtain approximation by direct appliances, but I have finally not been obliged to do so. The open operation I believe to be legitimate, and probably needful in a very few selected cases, but I am opposed to it as a routine treatment.

It is self-evident that the wound exposing a fracture must be aseptic, and that the operator who adopts incision must be familiar with the steps to be pursued at the inception of infective inflammation. A man who will hesitate to reopen the wound or drain the joint, at the moment septic premonitions show themselves, should associate a more energetic surgeon with himself in such operative treatment of fractures. The risk of incising muscles and opening joints, if done in an aseptic manner by an operator familiar with truly aseptic and antiseptic surgery, is unquestionably very slight. Primary union without disturbance of joint-function will be almost universal.

If it once be admitted that the seat of a fracture can be exposed by incision, with little or no risk to life, there are many advantages that will at once suggest themselves:

1. The exact lines of separation can be seen, and the significance of lines of comminution in relation to subsequent reconstruction can be fully appreciated.

2. Coaptation need no longer be guessed at by the sensations imparted to the examiner's fingers, separated as they are from the bone by varying thicknesses of muscle, fat and skin; nor need it be dependent upon the possibility of having conveniences for taking a skiagraph.

3. The fragments can be accurately fitted together, torn periosteum replaced, and muscular and fascial bands, nerves and muscles disentangled from undesirable positions between the pieces of broken bone. This prevents deformity by permitting restoration of normal contour of the limb, and lessens the occurrence of non-union, neuralgia, atrophy and ankylosis.

4. When the osseous, muscular, and vascular relations have been restored, they can be perfectly maintained by the application of sutures, pegs, nails, screws or ferrules to the bone, and sutures or ligatures to the muscles, nerves and vessels.

5. The pain, due to extravasation of blood, rapid inflammatory exudation or traumatic synovitis, is relieved by the removal of the clots and leaking out of exudation and synovial fluid. The interstitial pressure caused by extravasated blood and exudate has often heretofore caused surgeons to split the skin and deep fascia by long incisions, in very bad fractures, in order to avert threatened gangrene. A similar relief of tension in less urgent cases will undoubtedly lessen pain and suffering, though such operative treatment would ordinarily not be adopted. The incisions employed to uncover the fractures are therefore indirectly of value as relievers of pain.

6. Pain is also lessened, in the few cases requiring direct retentive apparatus, because the sutures, nails, or screws prevent motion between the fragments better than external splints. Muscular spasm or incautious movement has therefore little opportunity to cause suffering.

7. Fat embolism is probably less likely to occur in fractures liable to its occurrence, if early escape for the fatty debris is permitted by incision.

8. Ankylosis from faulty position of fragments, irregular formation of callus due to stripped up periosteum, and gluing down of tendons, will seldom occur after the fracture has been disclosed to the scrutiny of a competent surgeon.

9. Repair of the broken bone and functional restitution of the surrounding tissues occur more rapidly than when coaptation is imperfect, or when damaged, muscular and other structures are left to the unaided efforts of nature. Impairment of digital movements after fractures is probably often due to coincident rupture or laceration of muscles, which might have been repaired by suturing with catgut, if the surgeon had known of the existence of the complication. The aseptic wound affords him this opportunity; and afterward usually heals so rapidly that it is of no disadvantage to the patient's period of convalescence. This early restoration of wage-earning capacity is of great value to many patients.

10. It not infrequently happens that a closed fracture seems to have been well set, and to have left little deviation from the normal; and yet the patient has lost some of his availability as a machine. This is most likely to occur in the lower limb, which, during locomotion, carries the entire weight of the man. A slight change in the axis of a bone or in the plane of an articulating surface may perhaps throw the weight upon the hip, knee or ankle in an abnormal way and induce a considerable and ever-increasing disability. This contingency is usually avoidable after the accurate inspection of the injured bone permitted by uncovering the fracture by incisions.

In vicious union of fractures due to absence of treatment, or to injudicous treatment, I believe that it is sometimes much better to expose the seat of deformity and divide the deformed bone with an osteotome than to refracture subcutaneously by an osteoclast or the surgeon's hands. Many cases can indubitably be well treated by refracture without incision or by subcutaneous osteotomy; but if there be a reasonable doubt as to one of these methods

enabling the surgeon to accomplish relief of the deformity, free exposure, such as I have just been advocating in recent fractures, is the proper treatment.

A similar method of dealing with luxations which are not readily reduced by manipulation under anæsthesia is, in my opinion, preferable to a long continuance of unsuccessful manipulations, the application of great power by apparatus, or a relinquishing of the attempt to restore the integrity of the joint. It is true that in all dislocations, except those of the spinal column and the backward luxation of the second phalanx of the thumb, reduction is usually readily accomplished by skillful manipulation under anæsthesia, provided the attempt is made while the injury is recent. My contention is that in recent dislocations, when this is not the case, and in old dislocations, arthrotomy should be promptly done. No surgeon would recommend allowing the displacement to remain without attempting reduction, and I believe that compound pulleys or other methods of applying great force are usually more risky than prompt and thorough exposure by incision. Immediately before making the incision it would be well in most cases to make a final effort to reduce by manipulation; but this should not be carried to a sufficient extent to cause much bruising or muscular laceration. The presence of such traumatism would increase the liability to septic processes, if imperfect asepsis allowed germs to gain access to the wound during the operation.

Arthrotomy for irreducible dislocation is not a novel suggestion, for it has been repeatedly done by many surgeons in old injuries. It has not, however, I think, been often adopted until after vigorous efforts have been made to subcutaneously replace the separated articular surfaces. Its use in luxations a few hours or a few days old, except perhaps in the fingers and toes, is probably almost unknown as an accepted surgical procedure. I believe it ought to be the approved treatment in a small number of cases. The advantages of the open method will at once be patent when the accidents that occasionally follow the employment of the older methods are recalled. Fracture of the bone or laceration of artery, vein or nerve is only likely to occur when the region is not exposed to the operator's eye. In case of impossibility to properly reduce the dislocation, moreover, the end of the luxated bone can be excised. This will probably nearly always give a better functional result than to allow the previous condition to persist. Excision is not infrequently required after attempts to reduce old luxations without incision have proved unavailing. In an attempt to reduce an old luxation of the humerus I have displaced the head of the bone in such a way that it rested on the brachial plexus and caused more trouble than the original deformity. This would not have been the result, I think, if I had exposed the luxated bone by arthrotomy. If the open treatment is to be adopted it is evident that the patient will receive the greatest advantage if it be instituted before the head of the bone is altered in shape, the socket changed, and muscles and fasciæ contracted or adherent to surrounding tissues. The open method in addition gives opportunity to divide any ligaments, tendons, fasciæ and muscles which restrain reduction, to scrape out any material filling the socket, and to make provision for preventing recurrence of dislocation by retrenching the capsule or other plastic measures.

Skiagraphy may have a field in this department of surgery, as in fractures, by indicating the charcter of the luxation before the incision is made. It may perhaps be urged to this plea for a more general employment of exploratory incision in closed fractures and dislocations that there are great objections to making a closed lesion of the osseous system an open one.

I know of no objection except the risks inherent in anæsthesia. the possibility of infection, the occurrence of serious bleeding, and the production of ankylosis. The objections are of no force when the injury is one requiring exploratory incision. Anæsthesia will have been used in such instances for diagnosis or attempted reduction. Its moderate prolongation for the necessary time will add practically nothing to the risk. Bleeding is no contraindication except in that rare condition, hemorrhagic diathesis. Ankylosis is more liable to occur from displaced fragments or articular surfaces, irregular callus due to stripped up periosteum, and interference with articular contact, than from aseptic incision into the joint and readjustment of the joint structures. The possibility of infection is, then, the only factor that requires consideration. Fifteen or twenty years ago, even subcutaneous tenotomy at the heel, recommended by the surgeons of the Pennsylvania Hospital in cases of marked displacement after fractures of the tibia, was undertaken with some hesitation. Now operative infection in muscular and osseous lesions is so preventible and so readily managed by prompt action that it is no longer a valid objection to incision in a closed fracture or dislocation, if functional disability is liable to occur unless this operation is performed. For some years it has been the practice of surgeons to incise open fractures freely in order to thoroughly cleanse the deep recesses, obtain an antiseptic condition of the lesion, and get rid of effused blood. An extension of operative surgery is, in my opinion, now warranted in closed fractures and dislocations in which ordinary

methods of reduction prove unavailing or unsatisfactory.

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Miscellany.

Fractured Clavicle.

When the displacement is great, a splint can be applied direct to the fractured clavicle, in persons who are lean and the bone very prominent, as follows: Take a piece of Hood and Reynold's dental modeling composition, soften in hot water, flatten it out to a proper thickness and cut into a strip the length and breadth required, soften again in hot water and dry with a towel; then press or mold it firmly over the clavicle while holding the parts in apposition, exhausting all the air. It acts like a cupping glass; it will stay and not irritate the skin. Apply the sleeve bandage. In children there will be complete union in from twelve to eighteen days; in adults, in from thirty to forty.—Edward Borck.

Rights of the Surgeon.

A recent decision in the London courts involves a point of much importance to all physicians. A hospital nurse brought action against an eminent London surgeon, Dr. Charles J. Cullingworth, for performing the operation of double ovariotomy, when positive directions had been given not to exceed the single operation at the most. As a result of the double operation the plaintiff felt she must break an engagement of marriage. The question at issue was, Is it a medical man's right or duty to override the known wishes of a patient, even in the best interests of the health or life of the sufferer? Sir Thomas Spencer Wells, Lawson Tait and other leaders in the profession testified that they would not undertake to perform any operation under such restrictions as the plaintiff said she had imposed. The operating surgeon declared that when the plaintiff consented to the operating table, she tacitly consented to anything he thought best. However, he remarked to those about the operating table that he hardly knew what to do; a double operation was certainly indicated, and yet, considering the patient's wishes, the case presented grave and unusual complications. The doctor testified that the plaintiff might have lived for many years, if he had not operated, but in his opinion, the double operation was necessary for a radical cure. Therefore, he proceeded with the complete removal of both ovaries. The jury brought in a verdict in favor of the defendant. Yet it must be admitted that the surgeon was not altogether free from blame. The mistake was in undertaking an operation under such restrictions; but having agreed to the conditions, according to the plaintiff's testimony, it is certainly questionable how far these wishes and directions should be set aside.—National Medical Review.

Fees of Austrian Profession.

Everyone knows that in the German universities the professor is paid by his students, and that his fees represent the greater part of his benefits. The Austrian government, notwithstanding the resistance of the majority of doctors, has just decided to modify this state of things by presenting a bill which regulates the salary of the professors of a university. This bill suppresses the fees of students to professors and allots the payment of professors directly to the government. Students will not pay less, but they will pay to the government and not the professors. This is the French system. The professors who teach abstract matter (théoriques) and who have small audiences will profit by this change, but others, and particularly professors of clinics, who have from three to four hundred students, will see their revenues considerably diminished. It is to be feared that these professors will no longer hesitate to respond to calls from German universities, and on the other hand that German professors will refuse henceforth to accept a chair in an Austrian university. The new law would be fatal to the old fame of the medical school of Vienna.—Méd. Moderne.

Surgery and Vivisection.

A curious instance of the direct application of vivisection to practical surgery was related to the Linnean Society by Mr. J. D. Middleton. It is the custom in Smyrna to heal wounds by the help of ants. A friend of Mr. Middleton received a severe but clean cut on the forehead. He went to a Greek barber to have the wound dressed and the barber employed at least ten living ants to bite the two sides together. Pressing the margins of the cut with the fingers of the left hand, he applied the insect by means of a pair of forceps held in the right hand. The mandibles of the ant were widely open for self-defense, and as the insect was carefully brought near the wound,

it seized upon the raised surface, penetrated the skin on both sides, and remained tenaciously fixed while the operator severed the head from the thorax, so leaving the mandibles grasping the wound. The same operation was repeated until about ten ants' heads were fixed on the wound, and left in position for three days, or thereabouts, when the cut was healed and the heads removed. Sir John Lubbock, in his work on "Ants, Bees and Wasps," quotes from M. Mocquerys a passage which relates that the Indians of Brazil made use of this procedure in the case of wounds. He had often seen natives with wounds in course of healing with the assistance of seven or eight ants' heads. This surgical ant is the Atta æphalotes (Linn).—The Scalpel, December.

Doctors Should Not Be so Modest.

"I know that there is a general feeling among physicians of the better sort that conspicuous interest in public affairs may be misconstrued and looked upon as in some sort a means of professional advertisement. And one cannot choose but to appreciate and admire the sensitiveness and high sense of honor of which this sentiment is born. But, after all, there are greater misfortunes in life than being misunderstood, and I think that the fine feeling which leads the physician so often to waive the privileges of social and public life in the interest of what he conceives to be professional ethics is capable of a richer fruitage yet, in the defiance of misconstruction, when impelled to whatever performance of public duty he can justify to himself." Dr. T. Mitchell Prudden, address before Yale Medical School.

Notes, News and Personals.

Dr. Hartwell N. Lyon has been appointed house surgeon to the hospital of the Big Four Railway system at St. Louis. Dr. Lyon's four years of hospital work in London, Berlin, Vienna, Paris and Heidelberg give him most excellent qualifications for the position he has assumed. We congratulate Dr. Lyon and the company which he serves.

Dr. James A. Minnich, surgeon for the Pennsylvania Railway Company, at Worthington, Ind., died, January 30, 1897, from pneumonia. Dr. Minnich was born at Carlyle, Ind., in 1831, and was educated in medicine and surgery in New York City. After he had graduated he returned to Indiana and settled at Worthington, where he practiced medicine for a number of years. He was a member of the Indiana legislature for two years, and afterward became connected with a surgical institute. He lived in Indianapolis for seventeen years, and a few years ago returned to Worthington. His wife and five children survive him. Two of them—Mrs. Charles Railsback and Mr. Charles A. Minnich—live in Indianapolis.

Notes of Societies.

Twelfth International Medical Congress.

The American National Committee of the Twelfth International Congress, which is to meet at Moscow, Russia, from August 19 to 26, 1897, consists according to the directions of the general committee at Moscow, of the following gentlemen:

J. S. Billings, New York.
F. J. Shepherd, M. D., Montreal.
Geo. B. Shattuck, M. D., Boston.
W. S. Thayer, M. D., Baltimore.
Geo. F. Shrady, M. D., New York.
Frank P. Foster, M. D., New York.
Charles A. L. Reed, M. D., Cincinnati.
S. Weir Mitchell, M. D., Philadelphia.
A. Jacobi, M. D., chairman, 110 West 34th street, New York.

The chairman begs to invite the attention of the medical profession of the United States and Canada to the fact that the professional gentlemen in charge of the congress are anxious to make it a success both from a scientific and a social point of view.

Texas Railway Surgeons.

The fourth annual meeting of the Texas Railway Surgeons was held at Dallas, January 26 and 27, and the following is the program:

FIRST DAY—Tuesday, Jan. 26, 1897.

Association called to order by chairman of committee of arrangement.
Prayer by Rev. Dr. Rankin.
Address of welcome, by Hon. Frank Holland, mayor of Dallas.
Roll call.
Reading of minutes of previous meeting.
Treasurer's report.
Report of executive committee on credentials of applicants for membership.
Reports of standing committees.
Miscellaneous and new business.
Adjournment.

AFTERNOON SESSION—2 o'clock.

President's address.
Reading and discussion of papers:
1. "Some Diagnostic Points on Intestinal Surgery, With Demonstrations," Dr. C. A. Smith, chief surgeon Cotton Belt Railway, Tyler.
To Open Discussion—Dr. H. C. Smith of

Denison, company surgeon M., K. & T. Ry.

2. "The Railroader's Nose," Dr. R. F. Miller, oculist, Northern division Houston & Texas Central Railroad, Sherman.

To Open Discussion—Dr. F. P. Davis, Houston.

5. "Hemorrhagic Malaria," Dr. A. A. Bailey, Red, company surgeon Houston & Texas Central Railroad, Houston.

4. Subject unannounced, Dr. A. C. Scott, chief surgeon Gulf, Colorado & Santa Fe Railway, Temple.

5. "Hemorrhagic Malaria," Dr. A. A. Bailey, company surgeon Gulf, Colorado & Santa Fe Railway, Richmond.

To Open Discussion—Dr. J. R. Williamson, company surgeon Houston & Texas Central Railway, Brenham.

6. Volunteer papers and reports of cases.

Program for the night session will be announced by the chairman of the committee of arrangements.

SECOND DAY.

Reading and discussion of papers:

1. "Some Injuries to the Eye Found Among Railroad Men," Dr. E. P. Davis, oculist Houston & Texas Central Railway, Houston.

2. "Report of a Case of Appendicitis," Dr. J. R. Stuart, surgeon Houston & Texas Central Railway, Houston.

To Open Discussion—Dr. P. M. Raysor, Bryan.

3. Subject unannounced, Dr. A. A. Thompson, company surgeon Houston & Texas Central Railway, Waxahachie.

The following officers were elected for next year:

President, Dr. W. H. Monday; vice-presidents, Drs. A. B. Gardner, C. M. Rosser and G. B. Foscue; secretary, Dr. Clay Johnson; treasurer, Dr. A. A. Bailey; executive committee, Drs. R. F. Miller, G. B. Foscue and J. A. Lightfoot. The two former were re-elected and the latter succeeded Dr. Monday, the newly elected president of the association.

Galveston was selected as the next place of meeting, on the second Tuesday in August, 1897.

Dr. Stuart, the retiring president, then rose and handed the gavel to his successor. Mr. Monday made a brief address thanking his associates for the honor.

The following gentlemen were named as a committee on transportation: Drs. Stuart, Scott and Jenkinson.

After some routine business the association adjourned.

The next meeting of the Medical Society of the Missouri Valley will be held at Lincoln, Neb., on Thursday, March 18, 1897.

Notices and Reviews.

Borderland Studies. Miscellaneous Addresses and Essays Pertaining to Medicine and the Medical Profession, and Their Relations to General Science and Thought. By George M. Gould, A. M., M. D., formerly editor of The Medical News. Philadelphia: P. Blakiston Son & Co., 1012 Walnut street. 1896.

Most of the readers of The Railway Surgeon are doubtless familiar with some of the essays or addresses which Dr. Gould has brought together in this attractive form. Some of them have appeared in the editorial columns of the Philadelphia Medical News, others in the Forum, the Monist, and the Open Court. Each bears the mark of Dr. Gould's individuality and must carry conviction to all of his earnestness and enthusiasm in regard to each subject of which he writes.

Among the most noteworthy chapters are those on "Vivisection," "Medical Language," "Charity Organization and Medicine," "Hospitalism," "Everybody's Medical Duty" and "Dream Sleep and Consciousness."

For logical argument and keen analysis we can hardly conceive of anything stronger than the paper on "Vivisection," which was delivered at the American Academy of Medicine at Atlanta in May, 1896. To us it is absolutely unanswerable. We quite approve of him when he says: "Almost every point over which the controversy has raged most fiercely has been in relation to one or all of the three or four questions:

What is vivisection? By whom should it be performed? For what purposes should it be performed? By what method should it be carried out?

In reference to all of these questions scientific men should unite and establish a common set of principles or answers. In my judgment their failure to do so, and besides this, their frequent exaggeration of logical limits and just claims, has been one of the unfortunate causes of useless and wasteful wrangling.

Through many of the essays runs a vein of somberness, even of sadness, which has at times an appealing quality, indicating to us Dr. Gould's discontent with things as they are and his heartfelt desire to stir all men to help make things better. His faith is so strong and so pure that to him it is immoral to doubt the facts of immortality and a divine origin of things. He deeply loves nature, animate and

inanimate, hates shams and conventionality and adores everything which is beautiful in nature and art. All these things bespeak the man which he really is, and no matter how one may differ with him in his metaphysical views, no one can read anything which Dr. Gould writes without being the better for it.

Much credit is due Messrs. Blakiston, Son & Co. for the mechanical execution of the volume under review.

Anatomy: Descriptive and Surgical. By Henry Gray, F. R. S., Lecturer of Anatomy at St. George's Hospital Medical College.

New edition, thoroughly revised by American authorities from the thirteenth English edition, edited by T. Pickering Pick, F. R. C. S., with 772 illustrations, many of which are new.

For forty years English-speaking students and physicians have relied upon Gray for the basis of their medical knowledge, and hardly any other text-book has been so generally used or has maintained for so many years its supremacy and excellence over other books devoted to the same subject. And, of all editions which we have seen, this last American edition is the best in every respect. It is really the result of a complete revision by men especially qualified to critically scrutinize its various sections, and the chapters on the brain, the teeth and the abdominal viscera have been rewritten.

One hundred and thirty-five new engravings have been added to those which have always distinguished this work by their clearness and accuracy, some of which are beautifully colored. In spite of the additions, both to the text and its illustrations, the price of the work has not been increased. It is still published both in colors and in black alone. The presswork is characteristic of Lea Brothers & Co., and could hardly be surpassed.

Don'ts for Consumptives, or Scientific Management of Pulmonary Tuberculosis. How the Pulmonary Invalid May Make and Maintain a Modern Sanitarium of His Home, with Additional Chapters Descriptive of How Every Consumptive Person May Apply the Forces of Nature to Assist and Hasten Recovery, and also How the Defects of Heredity May be Best Overcome. By Charles Wilson Ingraham, M. D., Binghamton, N. Y.: February, 1896. The Call, Binghamton

The author states in his preface that the purposes of the book under review are to outline to the physician and pulmonary patient under his care a method of general management which, in the experience of the medical profession of to-day, has yielded the most substantial and permanent benefit, and especially to educate the pulmonary invalid in the details pertaining to the destruction of all infectious matter generated by his disease, that he may not be of the slightest danger to friends, family or the public.

These are confessedly good purposes and such works should receive our hearty approbation.

A perusal of the book demonstrates that the points have been thoroughly and carefully set forth in the light of recent knowledge upon the subject in hand. The book is written in a popular style and evidently chiefly for the enlightenment of the uninitiated, but unquestionably few physicians could read it without gaining valuable ideas in regard to the management of a disease which carries off more of our kind than any other. The paper and binding are good, but the presswork is not up to standard.

Practical Points in Nursing for Nurses in Private Practice, with Appendix Containing Rules for Feeding the Sick; Recipes for Invalid Foods and Beverages; Weights and Measures; Dose List and a Full Glossary of Medical Terms and Nursing Treatment. By Emily A. M. Stoney, graduate of the Training School for Nurses, Lawrence, Mass; superintendent of Training School for Nurses, Carney Hospital, South Boston, Mass. Illustrated with 73 engravings in the text and 9 colored and half-tone plates. Philadelphia: W. B. Saunders. 1896.

Most books of the character of the one under review have been anything but satisfactory from the standpoint of the physician. We are free to say, however, that Miss Stoney has succeeded wonderfully well in fulfilling the claims made upon her title page. The work is divided into seven parts. The first is devoted to: The nurse; her responsibilties, qualifications, equipment, etc. The second to: The sick room, its selection, preparation and management. The third to: The patient and the duties of the nurse in medical, surgical, obstetrical and gynæcological cases. The fourth: To nursing in accidents and emergencies. The fifth: To nursing in special cases. The sixth: To the nursing of the new born and sick children, and the seventh to physiology and descriptive anatomy.

Most physicians will certainly be satisfied

with Miss Stoney's ideas of the responsibilities of the nurse and the ethics of the sick room. We can also heartily approve when she says: "A nurse must be cheerful and talk of cheerful things, she must not tell of her experiences in other families; all that she sees or hears in the family for whom she is working must be kept secret and revealed to no one. She has no right to speak of one patient to another in private or hospital practice or to criticise or discuss her patients' peculiarities outside of her report to the physician."

It is extremely unfortunate that such ideas are not impressed upon all nurses, for they are certainly among the most important things which she should learn. Sick people are so susceptible to environment and mental impressions that it is just as important for the nurse to be wise and discreet in what she says as that she is obedient and careful in what she does.

The general excellencies of this little book are so great that criticism will seem, perhaps, unkind, but there is room everywhere for honest difference of opinion, and we cannot approve of the practice recommended upon page 124, regarding the bathing of the baby's eyes immediately after birth with a solution of bichloride of mercury, no matter what its strength may be. We would advise that in its stead a weak solution of borax be used and that the lids be gently opened and the eye thoroughly flushed with it.

In these days, when graphic art plays so important a part in bookmaking, we expect pictures in every medical text-book, no matter what the theme. The volume under review contains many excellent cuts, illustrating methods and appliances employed in the care of the sick. They have been well selected and well executed and add greatly to the value of the book. One is disappointed, however, to find in this excellent treatise a picture on page 77 illustrating an antique and barbarous method of giving a hypodermatic injection. It is so much easier for the physician and so much less painful for the patient if the skin over the supinator longus is made tense, instead of being picked up between the thumb and finger and the needle quickly thrust through the tensely drawn integument.

The paper, presswork and binding make this a very attractive volume.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the Medical Society of the State of North Carolina for 1896.

"The Value of the Pulmonic Second Sound," by J. N. Hall, M. D. Reprinted from the Journal of the American Medical Association, June 27, 1896.

"Intussusception Treated by Colono-Enteric Irrigation," by Edwin Pynchon, M. D. Reprinted from Mathew's Quarterly Journal, January, 1897.

"Report of three cases of Phthisis Pulmonalis Following Scald of the Chest," by J. N. Hall, M. D. Reprinted from the Medical Record, August 15, 1896.

"The Modern Pathology and Treatment of Acute Otitis Media," by Norval H. Pierce, M. D. Reprinted from the Journal of the American Medical Association, December 19, 1896.

"The Study of Cicatrices, With Reference to Right and Left Handedness and Ambidexterity," by J. N. Hall, M. D. Reprinted from the Boston Medical and Surgical Journal, December 17, 1896.

"A Clinical Study of Twenty-one Thousand Cases of Diseases of the Ear, Nose and Throat," by Seth Scott Bishop, B. S., M. D., LL. D. Reprinted from the Journal of the American Medical Association, September 26, 1896.

"Acute Supperative Inflammation of the Middle Ear; Acute Suppurative Mastoiditis: Abscess of the Neck; Operation," by Seth Scott Bishop, M. D., D. C. L. Reprinted from the Laryngoscope, St. Louis, September, 1896.

A Rapid Procedure of Intestinal Suture.

Jaboulay and Briau (Lyon Medical, April, 1896) describe their perfected method of circular intestinal suture. It is an outgrowth of one performed for resection of the intestine in 1891, and for gastro-enterostomy in 1892. Two threads are passed through the divided ends of the intestine, one at the mesentery and the other directly opposite; pulling on these threads causes the intestinal walls to lie side by side. The posterior edges are then sewn together by a Glover continuous suture in two rows. The first row unites the serous and muscular layers to each other, and the second unites the mucous layers on each side. The anterior half of the circumference of the bowel is then united by a double row of continuous suture, the first of which unites the mucous surfaces and the second or the outside the muscular and peritoneal coats. The two threads first introduced are then tied, and the operation is complete.—University Medical Magazine, November, 1896.

THE Railway Surgeon

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COLLES' FRACTURE.*

W. C. STATHERS, WHEELING, W. VA.

As my subject is an old one I fear I shall not be able to interest you, but feel that no apology is necessary for the attempt. It has been said that out of no other class of cases have arisen so many suits for malpractice as from fracture. The reason of this is not difficult to perceive. Disability in the upper extremity or lameness in the lower will fix the attention of the patient, and attract the notice of others. Therefore, in the treatment of fracture, it is a matter of great importance that the surgeon has an accurate acquaintance with normal anatomy, and no opportunity of examining fractures, whether in the living body or in the dead, in recent or in old specimens, should be neglected.

Every bone in the body is liable to fracture, but some bones are much more exposed and much more frequently broken than others. The bones of the extremities are nearly always the ones broken, and of these the radius is fractured oftener than any other. Fractures of the lower end of the radius are more numerous than of any other bone of the body, and the treatment of what is known as "Colles' fracture" seems to be followed by more unsatisfactory results than any other injury met with by the surgeon.

The history of the development of our present knowledge of this injury is so curious as to merit some notice. Poutan, in 1783, had thrown out the idea that fractures of the radius in the vicinity of the wrist, caused by falls on the hand, were "generally mistaken for sprains, for incomplete luxation, or for separation between the ulna and the radius," but the statement seems to have attracted no attention at the time. The same view was promulgated by others at the beginning of this century, but to Colles of Dublin is due the credit of having given the first clear and practical account of these injuries and of their distinctive features in 1814.

Dupuytren and Nelaton realized the importance of the fracture in question, although they seem not to have been aware of Colles' paper.

Even Sir Astley Cooper makes no mention of Colles' name, and Prof. R. W. Smith of Dublin was the first to accord him the credit to which he was so justly entitled.

In this country attention was first drawn to the subject by Dr. Barlow of Philadelphia, in 1838. His views were based upon clinical observation and anatomical facts.

In 1870 Prof. Moore of Rochester advanced the opinion that "the fracture of the radius is a less important lesion than the luxation of the lower end of the ulna," which certainly is often a marked feature of these cases, and he suggested a plan of treatment based upon this view.

The observations of Prof. Moore and other writers brought about a very important change in professional opinion. Luxations of the wrist, which were formerly supposed to be of very common occurrence, have been relegated to a place among the rare lesions.

Colles' fracture is unique; it has no parallel in surgery; of the three cardinal symptoms of fracture, viz., deformity, increased motion and crepitas, we have but one, deformity. There is no motion at the seat of fracture and motion at the wrist joint is lost. We sometimes get crepitas at the seat of fracture after the fracture is reduced. Another point to which I wish to call your attention is that, as a rule, no noticeable callus forms in the healing. There is marked unanimity in the deformity in all cases of this form of fracture, and Velpeau's comparison of the deformity to its resemblance

*Read at the meeting of B. & O. Railway Surgeons' Association in Philadelphia, Pa., June, 1896.

to a silver fork is not an inapt one. This symptom, together with the pain and loss of power in the hand, is often in itself conclusive evidence as to the nature of the injury. The injury may and is sometimes mistaken for luxation of the wrist joint, but it is not complimentary to the profession that such is the case.

The fracture of any bone is a serious injury, and we often are not able to attain the results we may wish. In this form of fracture there are a few conditions that render its treatment very difficult. The fracture is very close to the wrist-joint and to the bones of the hand that enter into that joint. Infiltration of the tissues and stiffness of the joints and general loss of power, associated with more or less pain and loss of those functions for which the forearm and hand have been so wisely designed, are, according to most writers and observers, very common as immediate results. One of the chief causes to bring about an imperfect result, in the treatment of this form of fracture, is that the fracture is often not properly reduced. A perfect coaptation of the fragments in this form of fracture is of more importance than in any other. Without this precaution we are apt to have a deformity that is always in sight. If the reduction is complete, a good result with a useful member is almost assured in any uncomplicated case. If we are not careful in bringing the parts together, there will be a slight deviation to the inner or ulnar side, destroying the sigmoid cavity, and the head of the ulna is crowded out and the want of perfect coaptation is apt to occur. The head of the ulna, by being so displaced, infringes on the ulnar nerve, causing trouble in the ring and little fingers. In this particular form of fracture the muscles have but little tendency to displace the fragments when they are properly adjusted, but do we always have in mind the relations of the radius and ulna to each other, and to the surface of the wrist? The posterior surface of the radius dips toward the head of the ulna at an angle of three to five degrees.

Whether or not we have attained that knowledge of the contour of the bones of the wrist necessary, it is certainly a common error to leave the internal side of the lower fragment a little above the normal position. We do not bring this little piece of bone, sometimes an inch long, sometimes half an inch, quite forward to its place. If we fail to bring this piece of fractured bone into its proper position what will be the result? When we dispense with our dressing, and before absorption has come to our rescue, we will find something like the following: The wrist will be straight, but the lower fragment will set diagonally upon the upper.

Another feature in this form of fracture that demands our attention is the dislocation forward of the head of the ulna from the triangular fibro-cartilage, and in addition to this dislocation is entanglement of the styloid process of the ulna in the fibers of the annular ligament, as described by Prof. Moore.

I have found this state to exist in the majority of cases which I have met. These cases can be reduced by means of extension and flexion, and by acting directly on the fragments and head of the ulna with the thumbs. If this maneuver fails it should be repeated, and ether used if there be much pain or muscular resistance. Too much stress cannot be laid on the importance of the perfect adjustment of the fracture, and reduction of the dislocated ulna, for the deformity after this accident is in many cases due to imperfect reposition of the head of the ulna. In aged patients who have a firmly impacted fracture, it is not advisable to break up the impaction, but deformity and impaired motion should be prognosticated.

In young persons the injury to the epiphysis may retard the growth of the bone in its long axis, cause a deflection of the hand to the radial side, and an abnormal projection of the styloid process of the ulna. To avoid the much-dreaded results, various splints and methods of treatment have been devised, but instead of reducing the number of unfavorable results, it is questionable whether they have not increased them.

A few who are careless observers have been led to rely on patent splints to reduce and correct the deformity and avoid the complications, rather than by a correct knowledge of the anatomy of the parts, and the forces producing the fracture, to appreciate the causes of the deformity and correct it before applying any splint, patent or homemade.

There have been numerous splints devised for the treatment of this fracture, and every deviser of a special splint recommended for this

fracture could cite cases in proof of the value of his splint, but the fact remains that if the fracture is completely reduced, almost any form of apparatus will keep the fragments in position.

SHOCK OR NEURO-PARALYSIS.*

By W. L. Dick, M. D., Columbus, Ohio.

Shock or neuroparalysis has been defined as a sudden or instantaneous depression of organic, nervous or vital power; often with more or less perturbation of body and mind, passing either into reaction or into fatal collapse, occasioned by the nature, severity or extent of an injury or by an overwhelming moral calamity. Its manifestations are through the nervous system and are exhibited more markedly by depressed action of the circulatory organs, vaso-motor paralysis. It immediately follows every injury requiring surgical attention, and is to be distinguished from the effects of hemorrhage, and in cases of surgical operation from the effects of anæsthetics, although in many instances it may be aggravated by either or both. The symptoms of shock are the immediate consequence of the injury sustained. The assumption of the possibility of a condition of delayed shock as often referred to by many surgeons is not consistent with the nature of shock itself. Whenever a condition of sudden and marked depression declares itself some time after the reception of an injury, it is always due to some distinct cause other than the original injury, and when recovery from shock is delayed, and we have distinct manifestations of improvement and retrogression present, a diseased condition, possibly resulting directly from the injury, is always the cause and should never be taken for delayed shock. For this reason the terms which are found in older textbooks and which are still often used in ordinary surgical parlance, viz., delayed shock, secondary shock and imperfect reaction from shock, may be misleading, as they tend to direct the attention from the real condition of the patient. The conditions which most frequently cause these symptoms of later depression are concealed hemorrhage, septic infection and fat embolism. Pulmonary œdema and renal congestion are also possible conditions always to be looked for when a sudden and unfavorable turn occurs in the condition of the patient soon after an injury has been sustained, especially when ether has been used as an anæsthetic. The pathology of shock cannot be determined by the ordinary methods of research. In such cases death leaves no change which can be detected in any of the tissues. Sometimes, however, as seems to have been shown by Galtz, a marked distinction of the intra-abdominal veins exists.

The phenomena of shock must be accepted as the measure of the ability of the individual to resist hurtful influences from without, which is very different in different cases and at different times in the same individual; but the influence, from whatever source it may come, whether from an injury or from a mental emotion, is made manifest through the vaso-motor nerves, which have their origin in the medulla oblongata, thence their fibers pass down into the interior of the spinal cord and issuing with the anterior roots of the spinal nerves traverse the various ganglia on the præ-vertebral cord of the sympathetic, and accompanied by the branches from these ganglia pass to their destination. Secondary or subordinate centers exist in the spinal cord and local centers in the various regions of the body, and through these various centers the vaso-motor changes are effected. These centers may be affected very greatly by impressions descending from the cerebrum, as in shock from great mental emotion, of which a good example is furnished us by Dr. R. Harvey Reed in a paper read before the Central Ohio Medical Society. In a B. & O. wreck a man received such a shock from fright that his finger and toe nails, together with his hair and beard, had died, the influence exerted through the vaso-motor nerves by the impression being so great as to impair nutrition to such an extent that the patient never recovered. In this case mental shock produced permanent lesions of the nervous system with its corresponding physical manifestations. We have, then, shock produced in three different ways, by injury, by mental emotion and by physical injury and mental emotion combined.

The symptoms are well known by every surgeon and need not be mentioned here. The most important points to us are how should shock be treated in railway injuries, and when is the best time for operation. The first duty

*Read at the meeting of the B. & O. Railway Surgeons' Association held at Philadelphia, Pa., June, 1896.

of the surgeon to the patient suffering from shock is to place the injured part in the most favorable position so that pain and increase of the already existing depression may be avoided as much as possible. If an immediate operation is not deemed advisable, perfect quiet should be secured, and every effort made to reassure the mind and allay the fears of the unfortunate victim of the injury. The patient should be placed in bed with hot water bags or bottles of hot water placed around him and covered with blankets to prevent radiation and restore the normal temperature of the body. The next important step is the judicious stimulation of the paralyzed and flagging nerve centers. I say judicious stimulation, for I believe there is often much harm done by constantly filling the patient's stomach with large draughts of whisky or other alcoholic drinks. Strychnia, sulphate or nitrate, with nitroglycerine or atropine, stands first on the list of stimulants and should be administered hypodermically in small and repeated doses until the desired results are obtained. Nitrate of strychnia and nitro-glycerine, aa 1-120th of a grain administered hypodermically every 15 to 30 minutes, is one of the best methods of stimulation. If, however, after a reasonable length of time, say 4 to 6 hours, the extremities remain cold, we may resort to the more diffusifee stimulants, such as alcohol, ammonia, hot milk, etc. We should not do too much but remember that time and physiological rest are important factors in the treatment of shock.

As to the time when the operation should be performed, there has been much discussion, and different surgeons differ in opinion as to when is the best time to operate. Ashurst says that in some instances, especially of compound fracture produced by railroad or machinery, the mangled limb seems by its presence to act as a continual source of depression, and in such cases he advises immediate amputation.

Bryant, as quoted by some writers, lays down the rule that in the presence of severe shock from slight injuries it is all right to operate, but in severe shock from severe injury it should not be done. Gross taught that the knife would often act as a stimulus favoring reaction from shock, but such has not been the experience of most surgeons of to-day. There can be no definite rule laid down by which a surgeon can be guided. Every case demands its own especial treatment, but it is generally conceded by all surgeons that operative interference should be delayed until reaction from shock be well advanced, except when we have a case of uncontrollable hemorrhage or one where the shock is kept up by some continuing cause.

Let me say in conclusion that when we are called to a railroad injury, the proper thing to do is to dress the injured part as quickly as possible with an antiseptic dressing and place it at rest, and if there be no hemorrhage, to administer the proper treatment for the relief of shock and await surgical interference until reaction is fully established.

SUMMARY.

First: Shock is never "delayed."

Second: Shock must be differentiated from reaction.

Third: The kind of stimulant indicated first is the kind that acts on the vaso-motor nervous system, such as the nitrate of strychnia, nitroglycerine, etc., and that if alcoholic stimulants are used at all they should not be used until 4 or 6 hours have passed, and not necessarily then unless the extremities remain cold.

Fourth: The time for operation must be left to the judgment of the surgeon, as no definite rule can be laid down as to when operative interference is indicated.

THE TREATMENT OF FRACTURES OF THE FEMUR.

By N. A. Drake, M. D., Kansas City, Mo.
Surgeon C. R. I. & P. Ry. and C. M. & St. P. Ry.

The treatment of fractures of the femur by extension and counter-extension, making the weight of the body the counter-extending force as recommended by Dr. Buck of New York, has greatly simplified the measures necessary to fill the indication. The rule governing the treatment of all fractures by whatever method is the same, viz., "Place the ends of the fractured bone in apposition and retain them there till union has taken place." I pass all other methods by, and will only describe Buck's, as I have used it almost exclusively in my practice. It is more difficult to keep the ends of a fractured femur in apposition than of any of the other long bones. The femur is surrounded by a greater mass of muscle and soft tissue than any of the other long bones, hence the splints or other

permanent dressings fail to keep the ends in place, especially when the fracture is very oblique.

The treatment by extension and counter-extension is as old as surgery, but the manner of applying the extension differs materially. The raising of the foot of the bed making the body weight the counter-extension force, was a happy thought. The body pulling one way and a weight over a pulley the other, is the whole principle. Hospitals are furnished with all the appliances to put up a fracture after Buck's method, a fracture bed, weights, pulley, etc. In private practice, however, the surgeon is obliged to rely upon what he finds in the house and what he has with him. We can usually get a bed or cot with a firm mattress, six bricks to raise the foot of the bed, three or four flatirons for a weight and in the absence of these an old tin pail to hold rock, carefully weighed; four long bags, made from firm cotton cloth, two to extend from the foot to the perineum, two to extend to axilla; they should be about two inches in diameter when filled with fine dry sand. We must have a strip of adhesive plaster four inches wide to extend from the bottom of the foot to four inches above the knee, on each side of the leg; a block of soft wood 4x5x1 inch, with a hole in the center to fasten the cord for the weight (it must be long enough to keep the adhesive plaster away from the ankles) and an ordinary three-inch roller bandage. If we have a pulley, it can be easily fastened to the foot of the bed; if not, we can bore a hole through the foot-board and pass the cord through it. We must not forget to shave the leg before applying the adhesive plaster. This having been done, we should proceed as follows:

Bandage the foot from the toes to above the ankle. Properly adjust the block at the bottom of the foot with the cord fastened to it. The adhesive plaster is now applied over the block and up either side of the leg to above the knee, clipping the edges of the plaster every few inches with the scissors so that it will lie smoothly on the leg. Now continue the roller over the adhesive plaster to two inches above the knee, turning the ends of the plaster down on the roller and covering them with its last turns. If we take hold of the cord and make extension we will observe that it will sustain any weight necessary. The pulley must be so placed that the extension will be on an exact line with the leg. Raise the foot of the bed six inches by placing three bricks under each leg. For a weight nothing is better than flatirons, and they are found in every house. For the first few days it will require a considerable weight, but as the spasmodic contraction is overcome, less will do. Carefully surround the leg with the sand bags, two on the inner side extending to the perineum, the longest on the outer side extending to the axilla. They must be so placed that pressure is made at the place of fracture. Sometimes I tie them in place by a piece of bandage; this, however, is hardly ever necessary.

Great care is now necessary to determine the exact amount of weight necessary to keep the ends of the broken bone in coaptation. The feelings of an intelligent patient will aid us greatly. If the ends are in place, he will be perfectly easy, if the extension is too great, he will complain of the pulling; if it is too light there will be more acute pain, etc. Particular attention must be paid to the heel, it must not be allowed to press by even the weight of the foot on the mattress, as an ulcer is easily formed which is not easily cured. We should be very particular to keep the leg in its natural line, and the foot in its normal position. There are many little things that one must watch closely. There are no two cases alike, and each must be studied by itself. After a few days we will know the exact weight necessary to keep the balance; if the weights are marked in pounds, we will know what it is; if not so marked it must be weighed, as it is necessary to know the exact amount.

At the end of two weeks union will have commenced; with care the weight can be removed, the bed let down, and passive motion of ankle and knee made. I commence this sooner than formerly and have only good results to report. The patient can now be given more liberty, the weight can also be lightened a pound or two, at the same time letting the bed down an inch. At the end of the third week we can make another reduction in the weight and lower the bed another inch. When I am sure I have a firm union, I put the leg up in plaster. The last few days the

weight has been cut down half and the bed let down to three or four inches, the joints have been put through their normal motions, the dressings all removed and the leg thoroughly bathed and rubbed. The plaster is applied from the knee to the perineum. A close, thin drawer leg underneath is sufficient; the plaster must be heavy enough to keep the femur from bending. In my opinion, more crooked legs are made by too early use than in any other way. Crutches can now be used but the patient should be admonished to put no weight on the foot for a week or two. The plaster is generally worn about two weeks, when it is cut open and sprung off and the leg is thoroughly bathed and rubbed, after which the cast is reapplied. If all is favorable, I then permit the patient to put some weight on the foot. The dressing should now be removed every few days and the limb bathed as before. If everything is all right the patient can now care for it himself. This he usually does at the end of five weeks from the injury.

This mode of treatment gives a greater percentage of good results than any other. In my own practice there is less shortening, and straighter legs, the time of treatment is less, the patient has more comfort and is not bound up with splints and strapped on his back. From almost the first day he can sit up without disturbing the dressings, and do many things that cannot be done under any other method. I am aware that I have advanced nothing new, I have only described an old method which has not received its proper credit by those in search of better methods. Hoping to say something to recall attention to an old and tried treatment is the excuse for this paper.

1001 Harrison street.

DERMATITIS TRAUMATICA.

By J. D. Milligan, M. D., Pittsburg, Pa.

Dermatitis is sometimes called acute eczema, and while this term may be correct, I will draw the line if possible and consider only that acute inflammation of the skin which follows injury to the soft parts, particularly of the hands and feet. The disease is ushered in by chilliness, thirst, loss of appetite, headache and insomnia, and there is elevation of the temperature which may reach 103 degrees F. The mucous membrane of the mouth is red and dry and the tongue is red at the point, with a white fur over the base. The parts affected assume an appearance closely resembling what we see in cases of poisoning by rhustoxicodendron, characterized by vesicles, elevated above the surrounding parts, but which quickly coalesce, destroying the cutis, and invading the corium or deeper layers of the skin, by the ulcerative process. The ulcers have undermined edges, assume a bluish tint and correspond closely to a phagedenic slough or local gangrene with a characteristic odor of decomposed fat. This pathological condition is attended by an intense burning and itching pain, heat and swelling with a congested condition of the circulation and enlargement of the lymphatic glands and a heavy, aching sensation, at first local, but quickly extending to the whole body, irritability of the nervous system, with suffusion of the face and all the constitutional disturbances found in acute inflammatory diseases. Constipation is the rule with scanty, acid, urine.

The following cases came under my observation during the summer of 1896:

Case 1. Crush and laceration of the great toe, causing destruction of the nail and soft parts of the ball of the great toe, laying bare the nerves and blood vessels. The wound was carefully washed with sterilized water, with the addition of etheral antiseptic soap (Johnston's) after which a 1-4000 solution of bichloride of mercury was freely applied. It was then sponged dry with cotton previously saturated in the above solution and squeezed dry. The wound was then dusted freely with iodoform, covered with iodoform gauze (ten per cent.) and then by eight or ten layers of dry sublimate gauze standard strength (1-1000), and lastly a thin layer of antiseptic absorbent cotton, and a gauze bandage. The wound was dressed daily, the same care being exercised, and the same solutions used except that no soap was used after the first cleansing. The wound progressed favorably, and the patient was discharged well but came back the second day after with a dermatitis, which quickly extended over the entire foot and lasted for about three weeks.

Case II. Crush and laceration of second and third fingers of the right hand, attended by considerable sloughing, leaving the nerves and vessels exposed. The wound was healthy in appearance and healing kindly when on the twelfth day the patient was attacked with dermatitis which quickly extended over the right hand and forearm and on the following day appeared on the left hand involving the entire hand to the wrist joint; a few blebs were also found on the great toe of the left foot. This case resisted treatment for four weeks.

Case III. Crush of right foot and ankle joint. Amputation at lower third of leg. A small slough occurred where a branch of the long saphenous vein was dissected out during the operation close to the exit of the musculo-cutaneous nerve. The wound healed rapidly and soundly except where the slough had been about the size of a silver quarter of a dollar when dermatitis set in, involving the entire stump and as far as the knee joint. It was apparently well in three weeks but was followed by recurrent attacks less severe but always attended with ,an intense burning itching pain starting from the point where the slough had been, and was only cured by resection of the nerve, which was found to have a neuroma at its end the size of a large bean. There has been no recurrence since the last operation, over five months ago.

The treatment adopted in these cases was practically the same. Calomel and soda was given at once upon the appearance of the dermatitis, followed by analkaline purge; quinine and sodium bicarbonate, in decided doses, was continued for the first week, followed by arsenic and iron, as a tonic. The local treatment was thorough cleansing of the affected parts with Thiersch's solution, and the application of lead and opium until the œdema began to yield, then black wash. Both of these remedies were applied hot and by saturating sterilized gauze and wrapping up the parts heavily, with rubber protective over all to retain the heat and moisture. When exfoliation began the parts were freely dusted with zinc stearate and bismuth subnit. (1 dr. to IV dr.) and covered by sterilized gauze saturated by pure vaseline.

These cases all came under observation during the months of July and August, 1896. The patients were not in contact with one another, neither was there any possibility of infection. There was no history of idiosyncracy to either iodoform or iodine.

There was in all three cases a marked similarity as to constitutional disturbance and all presented the same pathological condition save the extent of surface involved. Was the dermatitis due to injury to the nerves? If so, why did it not manifest itself at a period prior to the almost complete union of the injured parts? Was it caused by iodoform? If so, why was it necessary in the one case to do excision of the nerve to effect a cure?

410 Third avenue.

TREATMENT OF FRACTURE OF THE OLECRANON PROCESS OF THE ULNAR, NOT USUALLY PRACTICED.*

By B. J. Byrne, M. D., Ellicott City, Md.

William P., aged ten years, came to my office with an injury to the elbow. On examination I found that the olecranon was fractured and drawn up by the triceps muscle about one inch from its natural position. There was very little swelling. With the elbow bent at a right angle, I grasped the forearm with one hand and with the bent fingers of my other hand pulled down the upper fragment and felt that I brought the fractured ends in close and perfect apposition. It occurred to me that I could desire nothing better if I could only keep them so. I therefore made a small compress of absorbent cotton and with some narrow strips of surgeon's plaster succeeded in making these materials perform the service my two hands had done. I placed the compress posterior to and a little above the upper fragment to prevent chafing. With the plaster I made a loop, placing it in the depression just above the upper fragment. The strips were given a twist in a manner to better prevent the retraction of the upper fragment by the muscle. The ends of the strips were drawn on a line with the limb slightly converging and made adherent to the posterior aspect of the forearm. I then placed some circular bands of plaster around the

* Read at the meeting of the B. & O. Surgeons' Association, at Philadelphia, January, 1896.

forearm to make the strips more secure and to prevent the integument from sliding. By these means the fragments were held in close apposition. I then put a roller bandage on the arm to control the triceps and a light pasteboard splint to keep the elbow at a fixed angle. The result was a bony union and an unimpaired joint. In no work on surgery have I read that this fracture could be treated in this manner.

It may not always be practicable to treat the fracture in this way, but the result in this case was so satisfactory that I am led to believe that in a young subject, and when it is found that the fragments can be securely held, it makes a very much more convenient and comfortable method for the patient than having the arm extended, and that it can be safely resorted to.

Rusty Nails and Lockjaw.

This is an age of great progress, and nowhere possibly is this more apparent than in our own domain of medicine. Yet when we consider, in the light of modern science, much of the empirical knowledge of the fathers of medicine, we cannot too highly praise the closeness of their observations and the logic of their deductions. One of the first of the bacilli to be studied in connection with the modern science of disease was the bacillus of tetanus, the principal work being done by Nicolaier, and the bacillus was named after him. This bacillus is club-shaped, or, as expressed by Bonome, a fine bristle-shaped, pin-headed bacillus. There was much difficulty at first in cultivating this bacillus, as has been the case with many other pathogenic forms, but Mr. R. T. Hewlett, in London Lancet, described how this could be successfully and readily done. The bacillus of tetanus had always been noticed associated with petrefactive bacteria. The reason for this appears from Mr. Hewlett's method. This bacillus is anærobic, but, as he points out, is readily cultivated in an atmosphere of hydrogen. With a better laboratory knowledge of every form comes a better knowledge of its life habits, and so of this one.

Prof. Welch, of Johns Hopkins, says that of all pathogenic bacteria which appear in the soil the most frequent are those of malignant œdema and tetanus. It is a fact well known that after certain battles the wounded were very liable to be afflicted with tetanus. This would be explained, as pointed out by J. Lewis Smith, by the presence of the baccilli in the soil of the battlefield. He also mentions case occurring in hospital practice where patients coming to the surgical wards from certain districts developed tetanus. It seems to be now well settled that the tetanus bacillus thrives in the soil, and more especially in those soils where putrefaction is going on, as around houses where refuse matter is thrown. This brings us back to our first paragraph. We are all acquainted with the supposed popular connection between an injury to the foot by a rusty nail and lockjaw. Here we have that extremity which is always nearest the ground injured by the most common object, for the purposes, likely to be in the putrefactive area of civilization. In other words, you have a most successful inoculation of the bacillus nicolaier.—Dominion Medical Monthly.

To Prevent the Absorption of Poison During Operations on Septic Patients.

1. After the hands and arms are made aseptic, dip them in strong ammonia water, or in a saturated solution of oxalic acid. This procedure will instantly reveal to the surgeon the least abrasion of the skin from any cause. 2. All small abrasions, or separations of continuity of skin, should be painted with flexible collodion, and immediately covered with a few fibres of absorbent cotton. Dry this dressing quickly with heat from alcohol lamp, and again paint with flexible collodion, and dry in the same manner. Then sterilize finger in 1 to 100 bichloride solution. 3. If the wounds are on the joints, apply a strip of adhesive plaster over the cotton and collodion dressing, passing the plaster quite around the finger, at least twice. Fasten this dressing securely with thread. Or, instead of the adhesive plaster, draw on a rubber cot or glove. Sterilize finger or hand and dressing in 1 to 100 bichloride solution. 4. If the hand or finger is wounded during an operation, stop long enough to place on the wound a drop of saturated solution of carbolic acid, or lysol, or creolin, or touch it with a nitrate of silver point. Cover the wound with a small pledget of absorbent cotton, well saturated with carbolized or creolin water, and cover this cotton thoroughly with adhesive plaster. Fasten this plaster securely with thread. Sterlize the finger and dressing by immersing it in 1 to 100 bichloride solution, and proceed with operation. 5. Remember that your health is, or should be, as valuable as the patient's, and that if you have a good assistant to watch the patient, five minutes' time given to dressing your own wound will make no appreciable difference in the result of the operation you are performing.—Horace T. Hanks.

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THE ANNUAL CONVENTION.

In another column we publish the preliminary programme of the tenth annual meeting of the National Association of Railway Surgeons, which is to be held in Chicago, May 4, 5 and 6, 1897. The list of names of the surgeons who will contribute to the scientific value of the occasion includes those of some of our best known and most honored members whose words are always listened to with both pleasure and profit. One or more clinics will be held in connection with the meeting, and it is expected that one or more addresses will be read by prominent surgical teachers not members of the association. From present indications there will be an abundant programme and the value of the discussions will be enhanced by selecting gentlemen especially qualified to open the discussion of each paper. All those who would like to read papers at the coming meeting should communicate at once with the secretary of the association, Dr. Cassius D. Wescott, 31 Washington street, Chicago. We hope to publish the complete programme early in April.

A DAILY AT THE CONVENTION.

The publishers of The Railway Surgeon take pleasure in announcing that during the forthcoming annual convention of the National Association they will publish a daily paper to report the proceedings of the convention. There will be four issues of The Daily Railway Surgeon and a copy of each will be sent to every railway surgeon in the country.

While we are aware that the undertaking is a daring one and will involve considerable financial risk, we believe that the enterprise will attract so much creditable attention to both the association and its official journal that in the end the sum of the mutual benefits derived will offset any financial loss that may result. We are determined that in enterprise, quality and tone The Railway Surgeon shall be second to no surgical publication in America. The remarkably strong position which it holds to-day, after less than three years of existence, is, we believe, ample justification for the belief, so generally entertained, of a great future for this journal. Its influence has been felt in all parts of the country and in all departments of surgery. Since it began publication it has given to its readers some of the most brilliant papers on traumatic surgery that have ever been contributed to surgical literature. And the end is not yet. There is more of the same sort of work to be done.

The Daily Railway Surgeon will mark another great step in the progress of the National Association of Railway Surgeons. No other similar body can, we believe, boast of any such exponent of its annual conventions. The association will more than ever have occasion to feel proud of its official journal, and

we are gratified to state that the members to whom the proposition has thus far been presented are doing all they can to make "the daily" a success. A number of pages of advertising space have already been taken, and we are prepared to give our rates and best attention to all comers.

THE ROENTGEN RAY.

At a recent meeting of the Chicago Medical Society the utility of the Röntgen process was demonstrated by the exhibition of a variety of skiagraphs illustrative of bone surgery in many phases. Among other cases one was reported by Dr. Arthur D. Bevan in which a man was shot in the side of the head, the ball penetrating the temporal bone, wounding the middle meningeal artery and then passing into the orbit through the great wing of the sphenoid, and lodging just behind the eyeball. Without the aid furnished by the Röntgen picture it would have been absolutely impossible to locate the ball, although its presence in the orbit would have been suspected from the symptoms present. Dr. Bevan safely extracted the bullet, however, by the aid of the little black shadow of the piece of lead in the fainter shadow of the bones of the skull in the skiagraph, and "the patient is doing well." But the thing which we wished chiefly to say and which we are reminded of by the demonstration above referred to, is something of the dangers attending the use of the Röntgen rays in surgery. Numerous cases have been reported of late of dermatitis of greater or less severity due to prolonged or repeated exposure of the skin to these rays; but the most serious case of which we have knowledge, and which we believe has not yet been reported, is one in Cook County Hospital, in the service of Dr. J. B. Murphy. A number of skiagraphs of the head were taken in a short time, a dozen or more, one after another, and in due time a dermatitis appeared which has resisted treatment and has produced such an amount of scar tissue that the deformity of the eyelids threatens the loss of one or both eyes. We call attention to the case as a warning to surgeons who may be tempted to expose themselves or their patients too long or too often to the strange effects of these rays.

Notes of Societies.

The Western Ophthalmological, Otological, Laryngological and Rhinological Association.

The second annual meeting of the above society of western specialists will be held in the Planters' Hotel, at St. Louis, Mo., April 8 and 9, 1897. Dr Adolph Alt of St. Louis is president and Dr. Hal Foster is secretary. An enormous programme of seventy-five papers is promised and if half of them are read and adequately discussed, the meeting will prove of great value to those who are so fortunate as to be able to attend.

The Tenth Annual Meeting of the National Association of Railway Surgeons.

PRELIMINARY PROGRAMME.

The following is a list of the members of the National Association of Railway Surgeons who have already pledged papers for the annual convention to be held in Chicago, May 4, 5 and 6, 1897, with the titles of their contributions as far as announced:

Dr. John Punton, Kansas City, Mo., title not announced.

Dr. Frank H. Caldwell, Waycross, Ga., "Relief and Hospital Departments."

Dr. H. L. Getz, Marshalltown, Ia., title not announced.

Dr. Solon Marks, Milwaukee, Wis., title not announced.

Dr. W. T. Sarles, Sparta, Wis., "Traumatic Infections and Their Treatment."

Dr. Jabez N. Jackson, Kansas City, Mo., title not announced.

Dr. G. P. Conn, Concord, N. H., "Relation of Railway Companies to State Boards of Health."

Dr. C. W. Tangeman, Cincinnati, O., "An Exhibition of the Various Devices for the Determination of the Color Sense of Railway Employes."

Dr. A. L. Clark, Elgin, Ill., "A Case in Practice."

Dr A. C. McClanahan, Red Lodge, Mont., "Plaster of Paris and the Difficulty of Applying it to Recent Fractures."

Dr. W. R. Hamilton, Pittsburg, Pa., title not announced.

Dr. Thomas H. Briggs, Battle Creek, Minn., "Problems."

Dr. A. C. Wedge, Albert Lea, Minn., title not announced.

Dr. Rhett Goode, Mobile, Ala., "A Case of Osteo-sarcoma from Railway Injury."

Dr. E. W. Lee, Omaha, Neb., "The Treatment of Burns."

Dr. A. I. Bouffleur, Chicago, Ill., title not announced.

Dr. W. A. McCandlass, St. Louis, Mo., "Brain Abscess."

Dr. T. O. Summers, St. Louis, Mo., "Shock in Its Relation to Permanent Injury."

Dr. W. B. Outten, St. Louis, Mo., title not announced.

Dr. A. L. Fulton, Kansas City, Mo., "The First Care of the Patient in Railway Traumatism."

The St. Joseph and Grand Rapids Railway Surgeons' Association.

The semi-annual meeting of the surgeons of the the St. Joseph and Grand Rapids railway was held in St. Joseph, Mo., February 18. A score of doctors from points all along the system were present. Essays were read by Dr. B. S. Farley of York, Neb.; E. S. Garner of St. Joseph; R. S. Dinsmore of Troy, Kan., and F. K. Willett of Wathena, Kan. Officers for the ensuing year were elected as follows: Dr. R. S. Dinsmore, Troy, Kan., president; Dr. E. W. Bliss, Hiawatha, Kan., vice-president; Dr. Harry Redding, Sabetha, Kan., treasurer; Dr. Daniel Morton, St. Joseph, secretary. The semi-annual meeting will be held in April and October hereafter, the next meeting to be held the third Thursday in October.

Central of Georgia Railway Surgeons' Association.

The annual meeting of the Central of Georgia Railway Surgeons Association will be held in Macon, Ga., on April 20, 1897. The Committee on Programme asks that papers be written on the following questions on Emergency Surgery: "How to Prepare Simple and Compound Fractures for Transportation;" "Shock, its Nature and Treatment," "Can Aseptic Surgery be Practiced in Railway Work," "Contusions and Their Treatment," "Lacerated Wounds and Their Treatment," The Use and Abuse of Ad- of Traumatic Surgery."

No titles will be received after March 20, and all communications should be sent to

HOWARD J. WILLIAMS,
Committee on Programme.

hesive Plaster," "Reports of Interesting Cases

Communications.

More About Amputations Prothetically Considered.

Chicago, Ill., February 16, 1897.

To the Editors.

Dear Sirs:—I think that the paper entitled, "Amputations Prothetically Considered," by Dr. J. M. Thorne, in the last issue of The Railway Surgeon, should interest every prothetician who cares for the future of his profession, as well as every modern disciple of Æsculapius, I consider it the best article upon the subject, taken as a whole, that I have had the pleasure of reading. Speaking from the vantage ground of long experience, I know that if these directions were followed by every operator, stump legs would average better, and have increased capacity; irritable, neuromatous stumps and adherent ends would disappear and discomfort to the patient would be reduced to the minimum; moreover, the prothetician would less frequently meet the stump of good length, but so bunglingly treated by the operator as to have the general appearance of having been amputated with the cleaver. In fact, these methods and a uniformity in practice will remedy most of the evils of which we complain, yet not all of the bad or neuromatic stumps are due to faulty surgery; a reasonable percentage are directly chargeable to the efforts of would-be artificial limb makers and artificial legs constructed on principles which result in constriction of the circulation, producing poorly fed stump legs, and swollen and usually open ends, due to continuous pressure.

I am safe in asserting that unless the whole system is vitiated by disease or the wearer a hard drinker, the artificial leg is alone responsible for such a condition of the stump leg and is in all such cases the reasonable cause for re-amputation.

Every surgeon must have a diploma or go before an examining board and get a permit before he can practice and I believe that the prothetician should go before the same board and prove his right to practice. After a patient has been supplied with new extremities by the prothetician the difference between poorly and well formed stump legs is at once apparent; the man with the good stump legs

lus; and Landerer,[1] that in massage and passive movements there is no danger of its absorption, whilst Hartig has shown,[2] in his ambulatory treatment of fractures of the lower extremity, how great an amount of strain it can bear.

The first thing to be learned from this is, not to delay in putting up your fractures. After two days your bone is fixed and you will almost have to fracture it again if you await to overcome the deformity.

Secondly. Having placed the bones in and kept them there for several days—say five or six—the sooner gentle, passive motion is made the better, Lane having shown the shortening is due rather to the tying together of the parts by effusion than by muscular contraction. So the sooner some mode of absorbing the effusion is commenced the better.

Thirdly. The fear of shortening from muscular contraction being in part removed, there is a great deal less use of a heavy and stiff bandage. The lighter the dressing the better.

Fourthly. In fractures of the lower end of the humerus, not only is it best in the first days to dress the limb in extension, but the forearm should be pronated to a more or less degree, as in this way the extensor and flexor muscles are both more or less relaxed, and this makes apposition of the fragments of the humerus easier. After forty-eight hours the arm can then be placed midway between the two; then there should be the application of a light-hinged anterior splint, the hinge being so arranged as to give both flexion and pronation and supination anteriorly. The dressing should be of three strips of cardboard, one from elbow to wrist, and one from this joint to near the shoulder, having a larger one over these from near the shoulder to wrist; and so long as this dressing is on the patient should move the screw of the hinge backward and forward daily, flexing the arm more and more each day—say moving the screw six threads and letting back four, the next day more, and so on. There is no danger of the fragments losing their apposition. Lane had to use a jawed forcep to move those faultily placed.

Fractures of clavicle need not worry if they are kept still a short while. No one mode of dressing has been always successful with me, but generally the adhesive plaster has been the most useful. In this, as in most other fractures, I find early fixation best; and am convinced that too long continued mobilty of the fracture is the cause in a large number of cases of the formation of false joints.

In fractures of the radius near the wrist, my preference is a straight splint, and very early, active and passive motion.

I hope I may be allowed to say just a few words here in regard to one of the fractures of the lower extremity, that of the bones of the leg with rupture of the joints of the ankle. Here the surgeon at the start has a great deal of swelling to contend with before attempting to dress the fracture. Dress the sprain in the manner of Dr. Davis, as related by Dr. Gibney,[1] and then the surgeon will have no difficulty forty-eight hours after of applying any dressing he may desire.

Finally, I may be allowed to say that in the small number of fractures to be met with in a country practice, I have found that the time necessary for functional action is far less than I have seen stated in any article on their treatment, and am assured that anyone who will shorten the period he has hitherto kept his dressings on, he will be pleased by the greater mobility he finds in the adjacent joints, besides giving great relief to his patients by shortening their confinement.—Virginia Med. Semi-Monthly.

[1] Loc. Cit.
[2] Archives für Klinische Chirurgie, 1894.

Subcutaneous Wiring of the Patella.

Dr. Barker (British Medical Journal, April 18, 1896) describes his method of operating for fracture of the patella. The ligature used is silver wire instead of silk. The operation is to be done at once on the entrance of the patient to the hospital, usually within twelve hours of the fracture. The method is not adapted to old cases, but only to recent ones. No splint is used, simply the dressings, and massage and slight passive motion are made immediately following the operation. He operates as follows: The field of operation is made aseptic and the lower fragment steadied between the operator's left finger and thumb, while a narrow-bladed knife is thurst exactly through the middle of the upper attachment of the patellar ligament, with its upward edge cutting on the bone. When the blade has entered the joint it is withdrawn, still cutting on the lower edge of the lower fragment, and enlarging the skin wound upward to the extent of two-thirds of an inch. Through this opening a long stout needle is thrust into the joint behind both fragments and made to pierce the tendon of the quadriceps close to the upper edge of the upper fragment, exactly in the middle line. A knife is then entered alongside of the needle and a cut made down to the bone. A stout silver wire, the size of a No. 1 English catheter, is then threaded in the needle and withdrawn. The needle is unthreaded and passed from the lower to the upper opening between the skin and upper surface of the fragments. It is then threaded with the wire and withdrawn. The two ends of the wire emerging from the lower opening are then wrapped around a couple of rods to secure a firm hold, and crossed, drawn tight, and twisted three times. Before twist-

ing, the blood should be squeezed out of the joint. The whole operation should not take more than five minutes. By this method a firm limb is said to be obtained with good flexion and extension and apparently bony union. In cutting off the wires, ends half an inch long should be left, which are to be passed back into the opening and spread out in the soft parts. The broken ends of the bone should be well rubbed together before operating, so as to clear the separated parts of all clots and fibrous tissue.—The University Medical Magazine.

Remarks on Wounds of the Heart, With Notes of a Case in Which Death Took Place Four Months and a Half Subsequently, and Cicatrization Was Shown Post Mortem.[1]

By William Turner, M. A., M. D.,
Surgeon to the Colonial Hospital, Gibralter.

There unquestionably exists in the popular mind a firmly implanted belief that the heart of the animal organism is its most vital structure, that in order to attain the destruction of a life with the utmost certainty and with the utmost rapidity attention should be directed toward the destruction or disablement of this portion of the circulatory system. The deerstalker, for example, recognizes that his best chance of promptly securing his stag is to aim well on the shoulder as being the best landmark for reaching the heart; and so with big-game sportsmen generally. The bull-fighter maps out in his mind's eye a little area on the surface behind the shoulder blade through which his sword must penetrate en route to the heart, if he is to succeed in quickly dispatching his adversary. Military regulations direct that when an offender has to be executed by shooting, the firing party must point their weapons at the heart of the culprit, obviously with the idea that the extent of his suffering will thus be minimized. Indeed, it has even been supposed that if the substance of the heart be touched in any way by a foreign body its action must necessarily and immediately cease.

Most surgeons, however, can of their own experience abundantly disprove such notions. I recently saw a child, aged two years, with a sewing needle driven into its heart. The whole needle had disappeared into the chest, but I could feel its head underneath the skin tapping against my finger with each beat of the heart, and I was thus enabled to cut down upon it and extract it, no evident harm resulting to the heart or to the child.

A case which much impressed me at the time in regard to the degree of laceration which the heart is capable of undergoing before it is brought to a standstill occurred some years ago in my practice as police surgeon. The dead body of a young man was discovered by the police lying in a secluded spot with a series of some ten or twelve wounds over the region of the heart. A large butcher's knife lay buried in one of these wounds to the depth of four inches, and the right hand, covered with blood, grasped the handle of the knife. No doubt could be entertained that these wounds had been self-inflicted. At the necropsy it was found that no fewer than three of the wounds had penetrated the cavities of the heart, and had caused considerable laceration of its walls. It follows, therefore, that after the heart had in this case been at least twice run into by a large butcher's knife, and much damaged, the subject of the suicidal attack had retained the physical strength and mental determination necessary to inflict a third wound in the same organ.

Although the records of such cases are not numerous, they mostly point to the fact that wounds of the heart are seldom if ever immediately fatal. Out of the 29 collected cases of injury to the heart, only 2 were fatal within forty-eight hours.[2]

Of gunshot wounds of the heart some interesting examples are recorded. A stag ran 60 yards after being shot through the heart, examination of the heart showing that the left auricle had been practically annihilated, and the left ventricle completely torn through by the bullet.[3] There is a well authenticated case in which a bullet was found embedded in the substance of a soldier's heart six years after he had been wounded, he having died from quite another cause.[4]

The following examples of penetrating wounds of the heart, in which life was not immediately extinguished, may be interesting:

A soldier fell on his bayonet, which passed into his left side between the fifth and sixth ribs. Death took place on the fourth day. At the necropsy the wound was found to have penetrated the pleura costalis, passed over the thin edge of the lung, apparently without injuring it, perforated the pericardium, entered the left ventricle of the heart about one and a half inch from its apex, and passed out through the mediastinum into the vertebral column.[5]

Muhlig[6] relates the case of a mason who was stabbed with a stiletto on the left side of the sternum. His life was despaired of for a while, but he recovered sufficiently to return to his employment. Ten years later he was admitted to hospital suffering from excessive dyspnœa and anasarca, and with a loud double bruit accompanying the systole and diastole. After death the lung was found intimately connected

[1] Read at a meeting of the Gibralter Branch of the British Medical Association.

[2] Lancet, Oct. 8, 1881.
[3] Ibid
[4] Ibid.
[5] Medical Times and Gazette, Nov. 7, 1863.
[6] Medical Times and Gazette, Aug. 3, 1861.

with the pericardium by old adhesions, and the pericardium was intimately adherent to the heart throughout its whole extent. A rounded opening was found on the inner surface of the right ventricle admitting the little finger, and a corresponding hole in the interventricular septum leading into the left ventricle.

The heart in the case which I am about to describe shows a cicatrized wound over the interventricular septum, and will be interesting as furnishing additional proof of the fact that the heart may be the subject of laceration from external violence, and still be amenable to the healing process.

The patient, a young Maltese, was admitted to hospital on October 21, 1895, in a state of extreme collapse, bleeding freely from a wound in the left side of the chest over the region of the heart. I ascertained that during a quarrel with another Maltese he had been stabbed, probably with a large knife, and had almost immediately dropped on the ground. On examination in hospital, I found a horizontal wound in the chest over the cartilage of the fifth rib, and the cartilage itself was penetrated longitudinally by a slit one and three-fourths of an inch long. Bright arterial blood in considerable quantity was issuing in jets from the wound synchronously with the heart's contractions, and air was also passing with loud hissing noise on each movement of respiration. The heart sounds were muffled, and the pulse at the wrist was almost imperceptible. There appeared to be little hope of the patient's rallying, and his dying deposition was taken without delay. The surface of the body and extremities remained cold, and the pulse collapsed for twenty-four hours, when signs of returning warmth began to be observed. Breathing was very rapid, and the whole of the left side of the chest was absolutely dull on percussion.

A week later the patient's condition was still very critical. A sero-sanguinolent fluid was escaping in large quantity from the wound, and a cavernous resonance over the upper portion of the left lung indicated that pneumothorax had supervened. A month after the infliction of the wound the discharge from it was still abundant, and had become purulent. The pleural sac had become converted into a large suppurating cavity, and in spite of frequent antiseptic washings the character of the discharge did not improve. The fifth rib was therefore resected posteriorly so as to permit of a thorough drainage of the cavity, and a large rubber tube was inserted. The immediate effect of the operation was marked and satisfactory. Progress, however, was slow and fitful, and it was only after four and a half months that the patient's condition allowed of his sitting up in bed and being moved about the ward in a wheeled chair. One morning while he was sitting up and having his wound dressed he suddenly threw back his head, went into a convulsion and remained insensible till the evening, when he died.

Post-morten examination revealed deep congestion of the posterior surface of the brain, and an apoplectic clot of some size resting upon and compressing the occipital lobes. No evidence of embolism was apparent. The immediate cause of death, therefore, was clearly apoplexy. On opening the chest the left lung was found to be collapsed and retracted upward against the spinal column. The pleura was adherent to the pericardium, the interior of the pericardium and surface of the heart were granular, and some serous fluid was found in the pericardial sac. There was a cicatrix in the pericardium corresponding in position to the external wound, and immediately subjacent to it was discovered a cicatrix in the anterior surface of the heart itself. This cicatrix was three-quarters of an inch in extent, horizontally placed, and was situated over the interventricular septum, about one and one-half inch from the apex of the heart. It was found on section to have penetrated to a depth of five-eighths of an inch into the muscular substance of the heart. The left coronary artery and vein had been cut across. Apparently therefore the wound of the heart, although it probably had a remote influence in determining the fatal issue in this case, was not the immediate cause of death, and evidence to this effect was given at the coroner's inquest and at the trial.

It appears almost certain, and yet almost incredible, that after the infliction of the wound the pericardium must have been filled up with blood from the division of the coronary vessels, and yet the heart's action was not thereby brought to a standstill, but even entirely recovered from so gross an impediment.—British Medical Journal.

Roentgen's Rays in Gunshot Wounds of the Head.

Max Scheier (Deut. med. Woch., October 1) relates a case where by means of the Roentgen rays it was possible to prove the presence of a bullet in the brain and approximately to localize its position. A man, aged 27, had a gunshot wound five years ago, just above the outer end of the superciliary ridge on the right side, followed by unconsciousness. No exit wound was to be found. Later, amaurosis in the right eye, swelling and prominence of the eyeball, and dilatation and immobility of the pupil were observed. The right face was anæsthetic. The bullet was thought to be present in the orbit where a large blood effusion had taken place. The bullet could not be found there, but the inner and upper part of the orbital wall was ascertained to be

splintered. Five years later there was complete paralysis of the right fifth nerve except its motor branch, and paralysis of the olfactory and optic nerves. Buka took a Roentgen photograph of the head. A shadow of 5 mm. in diameter, 18 mm. from the root of the nose and 8 cm. from the back of the skull, was distinctly seen. The position of the bullet was somewhere in the neighborhood of the right Gasserian ganglion. If a photograph could have been taken immediately after the injury the exploration of the orbit would have been found to be unnecessary. A fracture of the base of the skull must have occurred, and thus the paralysis of the optic and olfactory nerves was brought about. Perhaps an operation undertaken immediately after the accident might have relieved the pressure on the trigeminal nerve, and thus also the paralysis.

The Use of Formalin in Infected Wounds.

BY A. L. CORY, M. D.,

Gynæcologist to the Englewood Hospital and Surgeon L. S. & M. S. Ry., Chicago.

My attention was called some time since to the use of a mixture of formalin and gelatin in infected wounds. A German firm placed the mixture on the market under the name of "glutol." Formalin is mixed with gelatin, which forms a solid mass; this is grated, forming a fine gray powder, in which state it is sold, to be dusted on the wound as we have been doing heretofore with iodoform or boric acid. An American firm have recently put the same thing on the market under its proper name, "formal-gelatin." It was claimed for it that when pus was present the gelatin would gradually dissolve in the secretions and liberate the formalin, which is a strong disinfectant, and thus keep up a continual action while any of the powder remained. On trial I failed to realize the good results, except in superficial injuries, for instance in two cases of scalp wounds. At the second dressing, 48 hours after the injury, the skin around several of the stitches looked quite inflamed and seemed about to suppurate, but on the application of the powder and fresh gauze at the next dressing, four days after, the wounds were found entirely healed. In cases where the infection was deep and pus already formed I could see no benefit from the powder. At this time I had under my care one of the nurses of Englewood Hospital who had been operated upon for appendicitis. The external wound had by some means become infected and I had opened it widely down to the peritoneum. In spite of all the measures I could apply, including the glutol, the wound surface continued to suppurate, and a pocket formed under the skin, beyond the wound but communicating with it, from which pocket I could press out at each daily dressing about two drams of pus. It then occurred to me to try the formalin in solution. Knowing it to be very strong, I without any special reason chose to make it of the strength of 1 to 200, formalin 1 dram, water 25 ounces. After the wound has been washed with sterile water until clean, I packed both it and the pus pocket with plain sterile gauze dipped in the above solution, and what was my surprise on the next morning to find no pus whatever. I again dressed it with the formalin, and at the end of another twenty-four hours removed it and dressed with iodoform, and the wound healed promptly without further formation of pus. At the same time I had under care a woman who had an Alexander operation for shortening the round ligaments, and in whom one of the wounds had become infected so that I had opened it widely for drainage. Two dressings of the formalin, 1 to 200, stopped pus formation, and the wound healed under iodoform without further suppuration. Since that time I have dressed all infected wounds, and we get many of them in railway surgery, because of dirt ground into the wound at the time of the injury, with plain gauze thoroughly wet with a solution of formalin 1 to 200, and have not had pus occur where the formalin could get to all parts of the wound.

I have had some wounds irrigated with the same solution, but do not get as good effects as where applied on gauze packed into the wound. In an amputation of the arm for railway injury suppuration occurred in the track of the drainage tube; here it was not possible to pack the entire tract with gauze, and irrigation seemed to reduce but not entirely stop pus formation. It would seem from my experience that the formalin must be held in place so that it may act on every part of the wound for several hours. In an acute case of gonorrhea in a woman, as proven by finding the gonococcus in great abundance, I had the vagina thoroughly douched, then packed it through a speculum with gauze wet with formalin 1 to 400. This was renewed for four days in succession, and the gonorrhea was cured.

My experience with the formalin has been so satisfactory that I desire others to try it and see if they can get the same good results.

I believe that with gauze dipped in the solution and the powder applied we have an ideal non-toxic dressing. With gauze wet with the solution packed in "pus pockets," and in gonorrhea in the female applied on gauze, we can get better results than with any other dressing used at present by the profession. I would not expect as good results in gonorrhea in the male, for there the formalin could not be re-

tained long enough in contact with the diseased surfaces. In making my solutions I have used the formalin 1, as it is really a 40 per cent. solution of the gas called formaldehyde. I have continued the formalin as a packing material in my pus cases only long enough to stop the pus secretion. I do not know that it would be injurious, but knowing that it is being used as a fixative of fresh specimens for microscopic specimens, I have feared that its continued use would harden the granulations and delay the cure, so as soon as the suppuration has stopped I have used iodoform in powder and plain gauze as a packing to stimulate the growth of granulations.—Journal of the Am. Med. Association.

4101 State Street.

Surgical Dressings.*

By Donald Maclean, M. D., LL. D., Detroit, Mich.

To the student of to-day, who in a few brief practical lessons acquires the simple and unostentatious art of dressing a wound either accidental or surgical, the vastly different methods of bygone times must seem no less fearful than wonderful.

The carefully and classically written details of the vast complicated painful dressings, with their superstitious attention to innumerable considerations which larger experience and clearer science have long since relegated to the limbo of the forgotten and the condemned, constitute a most interesting chapter in surgical history.

Within the distinct memory of a considerable proportion of the membership of this association, the technique of surgical dressings has passed through a vast and varied programme of changes. It would be tedious and unprofitable to inflict upon this audience an exhaustive review of these earliest and loyal efforts toward the devoutly to be wished-for goal of perfection. A more profitable and appropriate attitude, it seems to me, is one of inquiry as to whether there is not even yet something left to be desired; something to be accomplished; something to be hoped for in this common, everyday, all-important department of surgical work; and in our struggles forward and onward in this field the thought is irrepressible and undeniable that the whole past history of the subject coincides in impressing this one great fundamental lesson, namely, that just in proportion as the methods and procedures have become simplified our results—immediate and remote—have become more and more satisfactory. So far as the mental condition of the public in general is concerned as regards matters medical and surgical, I feel happily confident in the belief that in our time there has been a very material improvement. Especially is this true as regards matters surgical. There is, I am convinced, more of scientific reasonableness and less of medieval superstition and prejudice among the people everywhere than there was when I was young, and still it would be absurd to claim that there is not plenty of room for still further improvement in this respect. It is more easy and safe now for the surgeon to preach and practice faith in simple and unostentatious methods than it used to be; so that if a surgeon feels safe in resorting to extremely elementary appliances in the treatment of wounds, either accidental or surgical, or in treating fractures with very primitive dressings, splints or supports, or even discarding these entirely as he well may in certain cases, he is not so likely to be met with a storm of orthodox and most devout protestations based on the inherited experiences and legends of all the grandmothers—male and female—who have lived and left their impress on their posterity.

For my own part I have established as an important article of my surgical creed the doctrine that the oftener we are able to dispense with dressings or appliances of any kind the better for our patient as well as for our own peace of mind. In operations about the lip, the face, the scalp, the external genital organs, and in superficial wounds generally, anything beyond sutures of absorbable material, and just of sufficient strength to give proper support, I consider unnecessary, and of course if unnecessary, improper. In circumstances in which some additional covering or support may be required, then the plainer and less complicated the technique and the material used the better.

My attention has recently been attracted to asbestos as a possible addition of merit to our list of surgical dressings. A paper by Surgeon Kane, of the United States army, has set forth in suitable terms the claims of this material to our thoughtful consideration, and from what little thought and observation I have been able to devote to the subject, I feel justified in calling the attention of this association to it. It is at the present time prepared for the use of surgeons by a well-known wholesale manufacturer in New York who professes his perfect willingness to listen to and follow out any suggestions which may come to him from practical surgeons. I here present a few samples illustrative of the forms which this material may be made to assume, and these will at once suggest the uses to which it may be possible to apply it.—Physician and Surgeon.

* Read before the Detroit Medical and Library Association.

Miscellany.

Ether Anæsthesia.

The following from a letter to the Boston Medical and Surgical Journal, from the pen of William Henry Thayer, M. D., is of interest at this time:

"In 1846 I was Admitting Physician to the Massachusetts General Hospital, saw the first administration of ether there, and have a vivid recollection of the professional interest in the successful experiment. If Wm. T. G. Morton had presented the subject to the medical profession in the manner in which scientific men and physicians are accustomed to publish a discovery or an invention—as something that belongs to science—making no concealment or false pretense, the credit of his discovery would have been unanimously awarded to him,

"But his experiments were purely in mercantile interests. He wished to conceal the nature of the substance he was using. He came to the hospital surgeons with a false statement. He had colored the ether and stated that it was a composition, whose ingredients were his own secret. He called it "letheon." He wished to secure the endorsement of the medical profession, but reserve for himself control over its use. Medical men surmised that it was simply sulphuric ether—which he was soon obliged to allow.

"There is no question that the use of sulphuric ether as an anæsthetic at that time was due to the enterprise of Morton, and he would never have found it necessary to make any claim for the credit of it, if he had conducted himself honorably in relation to it."

Quite in contrast with Dr. Thayer's opinion of Dr. Morton is that of Dr. I. T. Dana of Portland, Me. In his "Reminiscences of Distinguished Physicians and Surgeons," in speaking of John C. Warren, the eminent New England surgeon, he says:

"When the anæsthetic use of ether was discovered by Dr. W. T. G. Morton, Dr. Warren at once became interested in it and afforded Dr. Morton opportunity to test it at the Massachusetts General Hospital during his service.

"I saw Dr. Warren perform one of the earliest operations made under ether at the Massachusetts General Hospital, Dr. Morton giving the ether. I well remember the great and anxious interest with which the numerous physicians and medical students present watched the patient, all unconscious of the knife, and the subsequent safe progressive recovery of consciousness. The profession and the people are undoubtedly under large obligation to Dr. Warren for his hearty and generous support extended to Dr. Morton, when the great discovery of ether anæsthesia was being established, in the face of opposition, suspicion and great jealousy. It is much to be regretted that the discoverer and donor to the race of so great a boon, should have been allowed to die without receiving more competent credit, and gratitude and pecuniary reward for the unspeakable blessing he had conferred upon his race."

The First Operation Under an Anæsthetic in England.

The first operation under ether in England was performed by Robert Liston in University College Hospital, on December 22, 1846. Among those present on the occasion were the late Sir John Erichsen, Sir Joseph Lister, Mr. William Cadge of Norwich, Dr. W. H. Ransom of Nottingham, and Dr. William Squire. Mr. William Cadge sends the following interesting note on the subject to the British Medical Journal:

"I have no written notes of what took place on that memorable occasion, and I must trust to my memory, which may betray me into mistakes as to some minor details, but as to the main incident of amputation of the thigh, the scene was too startling and dramatic ever to be erased from my recollection.

"Dr. Boot of Gower street had reported to Mr. Liston the definite and authentic information of the effect of ether inhalation that he received from Dr. Bigelow of Boston in December, 1846. Two days after this communication was the operating day at University College Hospital, and Liston resolved to put the matter to the test. In the interval Mr. Squire, the well-known chemist of Oxford street, prepared the apparatus, and Mr. (now Dr.) Squire administered the ether.

"On December 21, 1846, at two o'clock, the operating theater was filled with students and spectators; Liston addressed a few words to them as to the nature of the experiment about to be tried, and it was manifest that he had but faint hopes of its success.

"The patient was a man rather below middle age, who, to the best of my recollection, had malignant disease of the skin and tissues of the calf of the leg, for which amputation of the thigh was deemed to be necessary. He was a man of courage and of intelligence above the average of hospital patients, and he expressed his willingness to try the inhalation of ether. The apparatus comprised a large bell-shaped glass reservoir containing ether and a long tube and mouthpiece. Fortunately the vapor caused no bronchial irritation or nervous excitement; the patient passed easily into complete insensibility, and Liston removed the thigh as rapidly as possible; a gentleman present, watch in hand, declared that the cutting operation lasted thirty-two sec-

onds only. It was done by the antero-posterior flap method; the femoral artery was controlled by finger pressure; only three or four vessels required a ligature; lint dipped in water was placed between the flaps, and the stump was folded in a towel and all signs of blood cleared away.

In a few minutes the patient woke up completely and could answer these questions: 'Did he feel able to undergo the pain of the operation?' 'Yes, he would submit as best he could.' 'Did he not know that the limb was off?' Then he remonstrated against trifling with his feelings at such a moment; but, when the towel was removed from the uplifted stump so that he could see it, he burst into tears and fell back on his pillow.

"The scene at this moment was most impressive, for the success of the whole proceeding was as complete as could be witnessed at the present time. The great surgeon was almost as much affected as the patient; he saw at a glance what a blessing was in store for the human race, and what a boon for the surgeon, and he could scarcely command himself sufficiently to address even a few words to the spectators.

"The next case did not go off so smoothly. The patient was a rough fellow with an ingrowing toe-nail. He became boisterous and violent under the inhalation; he thrust the assistants on one side, jumped off the table, and, so far as I remember, escaped from the theater. He must, however, have been restrained or brought back and rendered insensible, seeing that the necessary operation was done without pain.

"Liston for that day could think of nothing but this wonderful discovery. He wrote this short note to Dr. Boot: '5 Clifford street, December 21, 1846. Dear Sir:—I tried the ether inhalation to-day in a case of amputation of the thigh, and in another requiring evulsion of both sides of the great toe-nail, and with the most perfect and satisfactory results. It is a very great matter to be able thus to destroy sensibility to such an extent without apparently any bad result. It is a fine thing for operating surgeons, and I thank you most sincerely for the early information you were so kind as to give me of it. Yours faithfully, Rob. Liston.' He also wrote a characteristic letter to his old friend and former assistant, Professor Miller of Edinburgh. I think the letter found its way into a Scotch newspaper, but I can only remember that it began and ended with a quotation from St. Paul, 'Rejoice, and again I say rejoice.'

"That evening I dined with Mr. Liston (I was acting as his private assistant at the time). Two ladies were present, and after the cloth was removed nothing would content him short of my exhibiting the effects of ether by inhalation. When about half under its full effect I could just hear the elder lady say, 'Liston, for God's sake stop; you will be the death of that poor young man.' He did stop, but I felt the effect of his strong grip of the lobe of the ear for a day or two."

The Doctor's Mistakes.

The following excellent editorial appeared in a recent issue of the New York Medical Record:

While it is unnecessary to deny that all human judgment is fallible, it is eminently judicious on the part of such as are called upon to venture opinions on probabilities to lessen as much as possible the chances of proving a rule. In the case of the doctor, the difficulty in fitting a prognosis to an ultimate fact is oftentimes insurmountable. The law of chances, with its multiplicity of controlling circumstances, is always against positive and unqualified assertions. The patient himself, with his hereditary proclivities, his individual environment, and his inherent vital power, is always an uncertain factor in a calculation of results. Even taking all such conditions into account, the best of men err. No one can be so sure that he is right that he has never had reason to regret that he has been too direct and too positive in the expression of an opinion. Our patients are never charitable in condoning this fault, but always hold it against the man who commits it. The more he attempts to explain, the worse off he is. The results of an autopsy are past all arguments for reconciling prognostications with facts. If the patient lives when otherwise he should die, he never loses his lucky privilege of talking back. His family and friends forget the joy of his recovery, often in spite of fate, in the satisfaction of getting even with the physician who gave up his patient so prematurely. The sympathies are always on the side of the man who wins, and, while no one regrets his reason for felicitation, the absence of one less witness against us might under other circumstances he borne by us with becoming resignation. The lesson is learned too late, that of saying and promising too much, and in thus doing more than our real duty to our patients. When we cannot control the causes of disaster, it is worse than folly to predict results. If we mistake a seventy-year clock for a twenty-year one, the pendulum in the former generally swings on until it runs down in its own regular way. It is the vital pendulum, after all, that must be studied, and until it actually stops it is never safe to say what is or what will be.

In all our relations with our patients, it is the safer and better rule to be more than cautious in our temptations to think aloud in their presence. A discrete general guards his line of

possible retreat with as much care as that of attack, concluding that while it is quite bad enough to be defeated, it is still worse to be hopelessly bagged by the enemy. The older practitioner need not be told that the practice of his art is constantly beset by startling surprises. Patients not only get well who should die, but many die without ostensible scientific reasons. To reconcile these constantly recurring experiences makes him an ever-ready trimmer to circumstances and an adept diplomatist with shifting fortune. While apparently knowing everything, he finds it eminently fitting his actual position to know little and say less. The loophole of expediency is as essential to him as are his advice and prescription to his patient. He learns to be astonished at nothing and always on the lookout for the unexpected. A sudden death is always explained with greater plausibility by the man who never declares his positive prognosis than by the one who has previously committed himself to its impossibility. So also with a doubtful diagnosis. It is always wiser to wait and see the eruption than on general reasoning to promise its appearance, to be sure that pus is present before risking a dry tap. The qualifying "if" comes in everywhere and every time. If the patient does not die, he may live; if pus is not present, the signs are simply misleading; if the case is not one of measles, the clinical history is wrong, and the patient has not been exposed; if it is not diphtheria, the bacteriological examination is at fault; if the wound does not heal, the sutures were not thoroughly aseptic. When nothing is promised, nothing is expected. We must balance one condition by the other, and the more evenly we do this the less often will the physician be charged with what he cannot reasonably help. A guarded mouth never needs to explain why the foot dropped in.

The Legal Value of Dying Declarations.

In the Boston Medical and Surgical Journal for November 26 Dr. Daniel March Jr. of Winchester, Mass., remarks that dying declarations, as defined by the American and English cyclopædias, are statements of homicide made by the victim under the solemn belief of impending death. The effect of such belief is regarded as equivalent to the sancity of an oath. Declarations so made are substitutes for sworn testimony, and they must be such narrative statements as a witness might give on the stand if living.

The importance to the physician or medical examiner of a knowledge of the subject of dying declarations, he says, was impressed upon his mind by a case of death from criminal abortion which occurred in his district about a year and a half ago. In this case the accused was brought to trial and convicted. During the trial dying statements of two different persons were offered in evidence. In one case this evidence, if admitted, would have been favorable to the accused; in the other, to the prosecution.

Dr. March thinks it is important for the physician in attendance upon a woman likely to die from the results of a criminal abortion to have clearly in mind his legal position and responsibilities. He quotes as follows a few of the acknowledged principles which have a bearing upon such cases: Dying declarations are accepted in law without being sworn to. It is naturally presumed that all statements made at such a solemn crisis must be sincere, believed at heart to be true by the dying person, even if subsequently shown not to be so.

The attending physician under such circumstances having expressed the opinion that the patient is dying and in sound mind, a magistrate should be summoned to take down the statements that the dying person may wish to make. Should it not be possible to obtain the services of a magistrate, then the attending physician can take down the dying declarations. The physician should, however, limit himself to writing down the exact words of the dying person, without offering any interpretation whatever. The statements should be read over to the dying person, and, if possible, her signature obtained.

The declarations must be made, not simply in articulo mortis, but under the sense of impending death, without expectation or hope of recovery. They are admissible even though others may not have thought the person would die.

The declarations may be signs or other appropriate modes of communication. It is not necessary that the examination of the dying person should be made after the manner of interrogating a witness in the case, although any departure from that mode may affect the value and credibility of the declarations. It is no objection to their admissibility that they were made in answer to leading questions, or were obtained by pressing and urgent solicitation, but the declarations must be made under a sense of impending dissolution. It does not matter that death failed to ensue until a considerable time after such declarations were made.

Declarations of a deceased person are admissible only in reference to those subjects to which she would have been competent to testify if sworn in the case. They must. therefore, in general, speak to facts only and not to mere matter of opinion, and they must be confined to what is relevant to the issue.

The circumstances under which the declarations were made are to be shown to the judge, and it is his province and not that of the jury to determine whether they are admissible.

If the deposition of the deceased has been taken under any of the statutes on that subject, and is inadmissible as such for want of compliance with some of the legal formalities, it seems that it may still be treated as a dying declaration if made in extremis.—N. Y. Medical Journal.

Researches Concerning the Action of Chloroform.

Reynier continues to advocate chloroform, which he thinks is much more easily used than ether. Patients react very differently from its effect, but a pre-anæsthetic examination of each patient will enable one to judge in advance what is likely to occur during chloroformization.

In a normal case the cerebral cells are first affected, then the medullary cells, and finally the bulbar. According to the more or less great resisting power of these various cells, fatal accidents may mark the early stages of anæsthetization. In alcoholics, whose cerebral cells are in a continual state of hyperæsthesia, delirium is observed, which may reach the stage of delirium tremens. In hysterical subjects all varieties of hysterical attacks may occur, even paralysis and syncope. The same is the case in epileptics. In morphinomaniacs only slightly intoxicated, chloroformization is easily and rapidly accomplished; in others, on the contrary, it is more dangerous. In ataxic subjects the period of medullary excitement nearly always gives rise to reflexes which may arrest the respiration and heart-movements.

These accidents, which mark the beginning of chloroformization, may also occur at the end; therefore, patients should never be left until completely awakened.—Universal Medical Journal.

Billroth's Advice to a Young Man Intending to Study Medicine.

A correspondent of the Boston Medical and Surgical Journal has published a letter addressed by Billroth to an intimate friend, from which we extract the following: "You tell me of the tribulations of the landed proprietor, his subjection to wind, weather, fire and the like; well, I have no intention of discouraging you or Robert, but the doctor does not lie altogether on a bed of roses. Competition grows constantly more fierce; in the beginning things generally come hard. As a student one has the pleasure of obtaining something of a glimpse into the workings of nature, as well as the diseases which assail humanity. The state of entire satisfaction which ensues on the passing the examinations is gradually undermined by the discovery that our knowledge is but fragmentary; that in those cases where we would most gladly render assistance we often fail of doing so; often, too, are we harrassed by doubts as to the proper course to pursue. Unless one is willing to pass through the world in a state of chronic perturbation, one must rest content with doing his duty to the best of his knowledge and belief. A man's greatest blessings are then met with in the shape of a placid and loving wife and undisturbed domestic happiness. Hardly, however, have you reached your home prepared to enjoy these pleasures, when there comes a knock on the door, and duty calls you out again into the cold and stormy night. Few are the joys of the physician. Here and there true loyalty on the part of his patients, emphasized occasionally, although perhaps seldom, by a material token, infrequent gratitude for the most absolute devotion to duty, nay, even for personal sacrifice; joy over a completed cure; the consciousness of having done one's utmost—these are ordinarily the highest satisfactions the physician can attain. You think, perchance, that I paint the picture in too gloomy colors; but when twenty years have gone by and these lines fall into Robert's hand, he will perhaps say that I was right. If once he has a true vocation for medicine, he need not take this into much account. You wish me to write you plainly and in detail. Do not fear lest I continue in this strain; the worst has been said, and, after all, the state of things here is not much worse than one finds in other walks of life. What special quality must one possess in order to be a good physician? My colleague here, Nothnagel, whose work on diseases of the nervous system will at some later day be appreciated by Robert, when inaugurated professor of the house clinic here, said, among other things in his address, 'Only a good man can be a good physician,' and I, too, share this opinion; it is the supreme regulator of the inner, as well as of the outer effect of the physician's actions. To the phrase 'good man' I would like to add the words 'well brought up,' that is, in a family the existence of which is permeated by a spirit of charity toward all mankind. This condition is fulfilled in the case of your Robert. He must be actuated by an uncontrollable impulse to help other unhappy creatures, at first implanted in him at his birth and well developed, while cultivated feeling and the experience of life have later led him through reflection to the conviction that, however eagerly the man of moral training may chase after happiness, he will ultimately find true happiness to lie in making others happy to the extent of his ability. In this direction alone dare he cultivate egotism, I mean make himself happy, and as much so as possible. In so far as this orginates in his moral training, it will be a never-failing source of self-purification, a means of strengthening the sense of duty, a reinforcement of his own moral nature. Should misfortune overwhelm him, he will find that, in assisting others who are even more unfortunate than himself, he has gained comfort as well as

the strength requisite for pressing on in the race. To enable the physician to spend himself freely, he must have accumulated a rich fund of knowledge. And in possessing such a treasure the physician enjoys the special privilege of seeing it increase directly in proportion to the lavishness with which it is spent. Activity in the practice of medicine leads to increase in experience, development of judgment, impels us to supply the deficiencies in our knowledge, enables us to follow the progress of the art of medicine, which itself results from the progress of science. A physician who gives himself up to critical, unprejudiced observation sees his own stock of experience and knowledge increase in the very dispensing of it for the relief of others—always provided that he is a good man, with a strong sense of duty, has a sound understanding and takes delight in work and in his calling."—Medical Record.

Legal Responsibilities of the Operating Surgeon.

A recent suit for damages against a surgeon in London for exceeding the wishes of a patient regarding the extent of an operation has just been decided for the defendant. The case was one of double oöphorectomy, against the express wishes of the patient that but one ovary should be removed. During the progress of the operation it became evident to the surgeon that the removal of the remaining offending organ was necessary for a radical cure. The patient, in consequence of this act, was compelled to break a marriage engagement which had been pending. The testimony in the trial bore upon some very important questions of professional responsibility in this and similar cases. While the course to be pursued must be governed by individual circumstances, the general reasons for specific action are admittedly controlled by well-understood general principles. The result of the case in hand carries with it a lesson of danger in lawsuits, which every surgeon should thoughtfully consider. It is legally held in this country and in other civilized communities that the consent of the patient, when such can be obtained, is always necessary in dividing the responsibility of any operative treatment. In the case of a child or of an insensible patient in imminent peril, the nearest relatives or friends are competent to decide for or against surgical interference. When such precautions are not or cannot be taken on the part of the operator, he assumes the sole responsibility of the result. No surgeon cares to do this when he can avoid it, and as a consequence he protects himself against the possibility of subsequent misunderstanding accordingly. A refusal to take proper advice under given circumstances is the affair of the patient and that of no one else. Hence, in the eyes of the law the patient has the right to decide his own chances; in other words, is privileged to take his life in his own hands, in spite of the judgment of the person who is summoned to his aid.

In the actual course of an operation the case is entirely different, and the discussion of the duties of the operator opens up a wide field for the exercise of his judgment in assuming unlooked-for risks, in meeting unsuspected conditions of emergency, or pressing matters of expediency. It is just here that a line can be drawn between what may be actually necessary to avert immediate death or subsequent disability and the surgeon's ideal of a complete operation. Especially is this true when the loss of an important organ is to be considered, and when the patient has forbidden its removal under any circumstances. No good operator would care to undertake the treatment of any case with such an embarrassing handicap; but when he does, he must, save in very exceptional instances, religiously abide by the conditions.

In the present case, the testimony showed that the operator, when asked to promise that but one ovary should be removed, replied that he would use his best judgment in complying with the request. The tacit consent to such a proposition was legally implied by the patient voluntarily placing herself upon the operating table, although she positively declared that she had given no direct assent to the proposal of the surgeon. Although it was not claimed that the removal of the second ovary was necessary to save the life of the patient at the time, but that it was for the sake of an ultimate cure, the jury, fortunately for the defendant, took the lenient side and most liberally indorsed what on general principles might be considered a laudable motive. Strictly speaking, however, there was a dangerous possibility for an entirely opposite view. That such chances should not be taken again is the real moral to this particular tale. One of the experts for the plaintiff expressed his belief that the second ovary was not sufficient diseased to require removal, but he evidently merits the pity of every practical gynecologist.

While this case may be looked upon as a leading one in protecting the surgeon in doubtful emergencies, the pros and cons cannot be weighed too carefully to prevent a disastrous reversal of the present ruling. If it were necessary that one more word should be said on this point, it is better in cases of doubt, when such can be safely done, to perform an exploratory operation and obtain consent for more radical measures afterward, than to be called to account for what the patient may term to be disobedience to his or her commands; but safest and best of all is never to undertake any operation whatever without the freest possible liberty for the use of personal

judgment on any and every contingency.—Medical Record.

Differential Diagnosis of Abscess of the Brain.

In the Fortschrit d. Medecin, November 15, 1896, Oppenheim emphasizes the difficulty of differential diagnosis in traumatic brain abscesses, which may be confounded with traumatic meningitis, apoplexy, encephalitis, tumor, epilepsy, traumatic neuroses, etc. Cases cited prove how easily a one-sided traumatic apoplexy, or a hemorrhagic non-purulent encephalitis may, from symptoms alone, be taken for abscess. Oppenheim mentions a striking case in a boy, in which a wound on the forehead was followed by slow pulse, optic neuritis, rigidity of the neck, etc. A diagnosis of frontal abscess was made, but puncture gave no pus. On the following day the pulse was 144, there was fever and unconsciousness, and rapid death. The autopsy showed a well-developed tubercular meningitis. The boy was ill before the accident. The traumatism merely gave an impulse to the development of the disease.

Suppurative meningitis occurring with an abscess is likely to be overlooked. An abscess of the brain is marked by normal or subnormal temperatures; fever is by no means a necessary symptom. If an attack begins with a rise of temperature, it is probably not due to an abscess of the brain—certainly not to an uncomplicated one. A slow pulse is, perhaps, the most reliable single symptom.

It is also well to remember that patients suffering from ear troubles often become hysterical, and that a hasty diagnosis of hysteria, even if the typical symptoms are present, may falsely be made in cerebral abscess of otitic origin.

Murphy's Button.

Czerny (Centralblatt für Chirurgie, No. 31, 1896), in an abstract of a paper read before the German Surgical Society, states that he was induced to use the buttons by the results of recent experiments made by Marwedel on animals. These researches prove that the button effects a very even union of the intestinal walls without pseudo-membranous adhesions, and that the opening shows no tendency to subsequent contraction. Of thirteen cases in which the author has used the button, three were fatal. In one of these fatal cases death was the result of pressure gangrene and perforation, in consequence of the application of too large a button. In the other two cases the button was used under the most unfavorable conditions of enterectomy for extensive gangrene of strangulated hernia.

The button, Czerny found, was usually discharged in the stools, in the course of the second or third week.

In a case of successful gastro-enterostomy, the button had not been passed up to the date of the patient's discharge, twenty-four days after the operation.

It is pointed out that the use of the Murphy button, like that of every other method of intestinal approximation, requires practice, although its mode of application can be more readily learned than that of a good double suture, which, in Czerny's opinion, is still the best method of closing wounds in the intestines.

The chief objection to Murphy's method is the sojourn of a heavy metallic substance in the intestinal canal; until this has been discharged naturally by the bowel the surgeon must remain anxious as to the welfare of his patient.

It is concluded that Murphy's button, though not the final solution of the problem of intestinal suture, marks an important advance in this direction, and, therefore, demands careful study.

The Early Morning Hour he Best for Operations.

The hour for capital operations is by no means an unimportant consideration. A writer in Gaillard's Medical Journal says that in following the course of operative cases and various operators for a number of years in the hospitals of a large city it seemed that the early morning hour had a great many claims entitling it to serious consideration. A good night's rest, attained artificially if necessary, an empty stomach, the patient all ready for anæthesia upon awakening, the fear and dread of what is coming being crowded into the fewest possible moments, the whole day with active attendants constantly moving about and alive to every demand of the patient, the ability to run in and see for one's self how the case is doing during the first twelve to eighteen hours without encroaching upon the practitioner's allotted time for sleep, are a few of the points which seem to recommend an early hour. On the other hand, it cannot be denied that it may be a source of greater task upon the surgeon's powers, especially if he be concerned and anxious, as conscientious men always must be, in regard to capital operations, and if this anxiety interferes with the operator's sleep. Even with this disadvantage he believes the operator capable of doing better work before he has become tired and annoyed by the various demands upon him during the early hours of the day. It would be impossible to compare the results, because of no data with which to make the comparison, but he believed that the men who have operated extensively in the early morning hours have never returned to afternoon operation as a matter of choice.—Medical and Surgical Reporter.

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THE ETHICAL RELATIONS OF THE RAILWAY SURGEON.*

BY HENRY B. HEMENWAY, A. M., M. D., EVANSTON, ILL.

Railroad companies are popularly considered soulless entities, whose every effort is directed toward "beating" all those with whom they come in contact. The result of this idea is the attempt of people to "beat" the roads. Men who would scorn to take unjustly from a private citizen, do not hesitate to attempt to take a ride at the expense of the railway company, and if perchance they can be so fortunate as to be caught in a wreck, they find themselves hopeless invalids until the case is settled.

The best of men sometimes err, and railroad employes are but human. According to my observation, in cases of injury especially, railroad companies are much more liberal than the average private citizen. We have all known of cases in which the company was not in the least to be blamed, and yet the doctor's bill and other expenses have been met by the company.

I stood by the side of an operator one day while he wrote an order for the waiting passenger train to meet a freight at the next station. When upon a curve between the stations the two conductors compared orders, they found that each was obeying his own orders. It later developed that the error was made by the operator who wrote the order for the freight. Fortunately no one was killed. The operator made an inexcusable blunder, but that did not excuse the malingering that was practiced by one of the injured to get a fat sum from the company. What surprised me was that the malingering was practiced under the direction of a former railway employe, who was then "above" railroading. The company was willing to do the fair thing. Why be too severe?

A railway surgeon is not a mere dispenser of physic and sawer of bones. His object is not only the saving of human life and the relieving of suffering. His work is broader. In his work he is brought into contact with (a) the corporation; (b) the injured and his friends; (c) other doctors, and (d) the clergy. The railway surgeon's first duty is to the company by which he is employed. The prime object in his employment is the securement of justice. Other doctors might be found who could perhaps treat the injury equally well. The appointment of a surgeon, however, insures good care, and it makes it possible for the railway company to secure definite information relative to the patient's condition. Justice is never hindered by truth. Where exact information is denied the company, injustice is being plotted.

I am fully aware that the attempt has been made to have it declared unethical for a surgeon to make a contract with a railway or other corporation. I cannot see, however, the essential difference between an engagement to look after the interests of a corporation and agreeing to attend in a confinement. In the legal profession retainers are customary. As previously remarked, the duties of the railway surgeon are partly legal.

The honest interests of the company and of the patient are not really antagonistic. In one case of interference the claim was made that I, being in the employ of the company, would be looking out for the company's interests, and the following conversation occurred with a representative of the family:

I asked: "Do you not want the patient to recover?"

"Certainly."

*Read at the fourth annual meeting of the C., M. & St. P. Ry. Surgeons' Association, held in Chicago, November 12-13, 1896.

"Do you not want him to get well as quickly as possible?"

"Of course."

"Don't you want a perfect recovery?"

"Of course."

"Is it not for the interest of the company that he get well, and that he recover as quickly and perfectly as possible?"

"I think that's so."

"Well, wherein are his interests not the same as those of the company?"

"I don't know."

I kept control of the case.

It is expected that the surgeon will assist in collecting evidence. He should keep memoranda of important physical conditions and dates, for use in case of trial. He should give the statement of the patient as given, if possible; but if the surgeon should see disagreement between statement and facts, he should call attention thereto. He should be careful, however, not to raise a doubt where none existed. For example, a trainman had a head injury. He was able to walk and talk, though he was a little flighty. His breath smelled strongly of whisky, though he declared that he had not touched a drop. The friends who were with him at the time said they had given him none. I therefore concluded he was a little full before the accident, and that might have accounted for it. I am glad to say that before I sent in a report to that effect I accidentally ran across another trainman who was present at the accident, and in telling me about it he said that he, the narrator, had given the injured man some liquor as soon as possible, before he was taken home.

When the evidence is clear that the company is not to be blamed for the accident, if the company's surgeon takes charge of the injured, it should be understood that he does so as a private citizen, not as representing the company. For that reason I have sometimes taken another surgeon with me, letting him reach the patient first, that by the common code it might be considered his patient, and I an assistant.

In another instance in which the company's responsibility was questionable, the family sent for their family physician. I told them that I represented the company, simply wishing to know the extent of the injuries, and giving temporary relief. In answer to their questions I signified my willingness to assist their family physician, or, if they wished it, to take charge of the case, but in either case I would not represent the company, but be in the employ of the family.

The company's surgeon should be loyal to his company. He should not permit unjust criticism upon the company in his presence. He should aid in the settlement of claims, even in cases not under his care. It sometimes happens that the surgeon, riding as he does across the railroad in his buggy, rather than along the track, discovers points of danger previously overlooked. I think it is entirely proper to call attention to a dangerous crossing, and the reasons why it is so. A negligent flagman should be promptly reported. In one instance I found a man who had been in the employ of the company for over thirty years, in charge of a very important crossing close to a station on a trunk line in Michigan. He had asked to be given a less responsible position, but he was too trustworthy. By accident I discovered a serious heart lesion, which rendered him liable to sudden prostration. A report to the proper authorities caused his removal to another crossing. While I was in Michigan complaint had been made that the stagnant water in a certain pond was producing sickness. While looking for some means of draining the pond I found that the trouble was really not in the pond at all, but on railroad land close by, which was covered by a thick growth of bushes. This land was in a city, and it would be only a question of time, perhaps, before a suit for damages might be instituted against the company. A single trainload of dirt corrected the difficulty.

In regard to relations with the patients and friends, it must be remembered that the company surgeon has no right to assume the care of the case without the consent of the patient or the family. He has a moral right to know the exact condition of the patient, and to do so must make an examination. If the company surgeon is satisfied that the case is not receiving proper care he should make an immediate report to that effect in writing, and if time does not permit of delay, he should, if possible, bring another trustworthy surgeon to substantiate his report. For example, if an arm or a leg is about to be unnecessarily sacrificed.

It is never best to force one's way to the patient in spite of the family. Such a course will do no one any good, but rather complicate conditions.

According to the common code the first physician to a patient injured, takes the case; but if the family physician arrives the case should be surrendered to him. Generally speaking, in railroad cases the company surgeon takes the place of the family physician in the above rule. If, however, a preference is expressed by the family for another surgeon the company's representative is limited in his work to observation. A neglect of this rule has caused much misunderstanding among individuals, and it has produced attacks upon corporation surgeons generally. If, therefore, the company's representative arrives upon the scene after other surgeons, it is proper for him to announce his relation to the case, and ask if anyone else is there to represent the family. This he may first discover by inquiry from the family. If the family physician is already there the company surgeon should offer assistance, and not infrequently the case will be surrendered. If the company's surgeon arrives first he should invite the assistance of the family physician.

If the case is in the hands of an unworthy member of the profession, report should be at once made to the company, and his unworthiness pointed out to the family. The fact that he graduated from a homœopathic or eclectic school should not alone, however, be deemed sufficient cause for protest to the family, even if the surgeon would not ordinarily meet him in consultation. Nor should that be sufficient cause for refusing to assist in an operation.

If the treatment contemplated or practiced by the family physician is contrary to the judgment of the company's representative, he should make private protest to the doctor. If the treatment is persisted in, the fact should be at once reported to the company, with reasons for disagreement. If the question seems vital, permission should be asked from the doctor to make statement to the family in case a satisfactory consultant cannot be secured otherwise.

In all cases the company's surgeon must use the utmost care not to unjustly disturb the ordinary relations between the family and their ordinary attendant.

In cases where there are no special instructions, and an operation has been begun, or dressings applied by another physician first upon the ground, it has been my custom not to claim the case. In not a few instances the other physician will at once insist on yielding the case, especially where the pay is doubtful. I have considered in such doubtful cases that it is better for the corporation for me to assume control in such doubtful cases.

It often becomes necessary for the surgeon to find a place in which to care for an injured person. Of course, in so doing, he must first consider the patient's interests. In so doing it will not infrequently become necessary to take him to a hospital having a regular staff. This complication arose in my own experience. A hospital rule required that private patients be treated in private rooms, and all patients in general wards should be treated by the staff then on duty. Though myself a member of the staff "off duty" I had not so understood the rule as mandatory. For good reasons the patient, injured in the night, could not be treated in a private room, and he was therefore put into a ward. When I next called I found my orders upset by a member of the staff then on duty, he having been informed that it was a case for him. I insisted that the railroad company expected me to look after their work, and the hospital management yielded. In this particular case I should not have insisted, except for precedent, as the member of the staff then on duty was thoroughly reliable.

Lastly, I am sorry to say that sometimes the surgeon comes in conflict with the clergy. I am aware that the medical profession is not ordinarily considered too religious. I venture the assertion, however, that no profession, not even excluding the clergy, as a profession, follows more closely the example of the Divine Healer—the Great Physician. We may be sometimes rough in speech, but more self-sacrificing, kindly and sympathetic, more thoroughly filled with the real truths—not doctrinal arguments—of Christianity, there is no class of men. We should be on friendly and sympathetic terms with the clergy. It is best when we see death approaching to notify the

friends, and sometimes to send for a suitable clergyman. We should be particularly careful not to violate the religious beliefs of a patient. It may be that for himself the surgeon may scoff at "extreme unction." If the patient is a Romanist the surgeon has no right to force his ideas between the patient and his priest. The surgeon may believe that he is right, but he does not know.

When, therefore, a Romanist is seriously injured he should assist the priest to have access to the patient. I never have found them unreasonable. As a class Roman priests are anxious to help the physician, and they use good judgment. Two or three minutes may be spared without detriment to the patient's condition. I am sorry, to say, however, that I have several times known of Protestant surgeons absolutely preventing a priest from conferring with a member of his church.

DISCUSSION OF DR. HEMENWAY'S PAPER.

Dr. A. I. Bouffleur: There are just two points that I wish to speak about in connection with this paper. One is with reference to taking care of a person or offering services in a case in which another physician has been called in. I think it is a good plan, and one which will meet with the approbation of the officials of the company, in a case of that sort to offer your services, and, if possible, offer them in the presence of a third party, someone not interested in the case. Also at the time, if they decide to have the family physician or someone else to care for them, you should inform them that the company you represent is willing to have the surgeon take care of the case without expense to them. Furthermore, in offering your services, also state to them that if they prefer their own physician they can have him, but they must not expect the company to pay him. By so doing you will decide the question in a few minutes. Some people get an idea that they can call their family physician and the company will pay the family physician for his services. If the company is liable, they will do this. You should make a note of all these points in your report of the circumstances to the claim agent, stating whether or not the doctor is to be paid by the company, so that whatever fee is to be received would be included in the bill of settlement.

As far as the employe is concerned, unless the company is grossly liable, I would not entertain any view at the time of settlement in the case. Your report is looked upon as your side of the case. The patient will present his side of the case at the time of settlement, when perhaps you are not at hand. If your report does not state the facts in the case it is your fault, and if your interests are not conserved at the time the settlement is made to the extent of the other physician's position being recognized and a fee allowed him, it is in all probability because you have not stated the facts to the claim department. It is the desire of the company not only to protect the surgeon, so far as his immediate connection with the case is concerned, but also as far as the medical profession of the community is concerned. But they cannot do so unless they have the facts showing them who assumed charge of the case. I run across a case of this nature once or twice a month. Some employe goes down to the claim department and says that he could not get me at the time of the accident. You will have to meet these issues. The patient tells his story, and you are not there. They will have to give them weight. Subsequently some of you receive letters inquiring why you did not take care of John Jones at such and such a time, and you are told by the company that Dr. So-and-So took care of him and a large bill was incurred in consequence. I come across these cases quite often, and I take special pains to run them down. I am not called upon to do anything more than make a statement, and we find in nineteen out of twenty cases that the cases are stirred up for the purpose of getting the doctor's bill paid.

The next point I wish to mention, and one which comes to the surface each time we meet, is a very delicate topic. I refer to the question of schools in medicine and the relation they have to railway surgeons, and especially to our meetings. There was a reference in the Doctor's paper which called the matter to my mind. The question of medical schools cuts absolutely no figure with the railway company. They do not recognize them. They do not know the difference between them, and personally I do not know the difference between them as far as the railway surgeon is concerned. I think when the list is run over and checked up we will find quite a number

of homœopaths and a number of eclectics. I do not know whether there are any physio-medical men or not, but it matters not to the railway company. We are all doctors as far as they are concerned, and let us be broad enough to be doctors as far as we ourselves are concerned. The science of medicine is broad enough to include all the schools and "isms" in Christendom, and so far as your relations with me or my relations with you are concerned, they should be as doctors and not as members of this or that school. Sometimes the question comes up: "Shall I consult with such a doctor?" Some of you, perhaps, have scruples on the question of consulting with some homœopath or eclectic. There are no "isms" in the profession so far as the railway company is concerned, and you should be willing to consult with each other as freely as you would consult with members of the same church, or of any other church, in regard to any religious affair. When you come to a city election you do not figure all the time whether this individual is a Congregationalist, or a Methodist, or a Baptist, or a Catholic. They are all trying to get to heaven, and it is all right so far as good citizens are concerned. I am a cosmopolitan on the question of "isms," and while I am not very old, I am of the opinion that as we grow older we are becoming more and more liberal. I expect to live long enough to see all the "ism" business disposed of in the medical profession, so far as any distinct lines are concerned. So far as the railway is concerned, so far as your relations with the patients and their disease is concerned, these things are out of consideration, and I wish in our discussions here that it would be always so considered, and that in our dealings and relations with one another the same friendly spirit will at all times prevail.

Dr. McLean: I fully agree with what Dr. Bouffleur has said on this subject. I want to ask one or two questions as to our relations with local and state societies in regard to this matter. Those who are members of the regular profession, who subscribe to the code of ethics of the American Medical Association, find themselves placed in a rather embarrassing situation. Are we not restricted in this matter of consultations with other physicians? Do we not make ourselves liable to charges and expulsion from our local societies? How about this?

Dr. Bouffleur: The cause of humanity is superior to any other cause that we have to deal with, and if any society is so narrow or dogmatic as to expel me because I consult or have professional relations with a homœopath, and especially if it be in a case of railway surgery for a company by which we are both employed, I want to be expelled, and the quicker the better.

Dr. Hemenway: I wish to call attention to one or two points brought out by Dr. Bouffleur, one in particular. That is our explaining why we are not called in certain cases. I sometimes wish the instructions sent out were a little more mandatory to those in charge, relative to injuries, that we might receive immediate notice. I know in one instance some three months ago, after an injury occured, I received a letter asking for a report of a certain case that occurred in my jurisdiction, and it was absolutely impossible to give it, as it was the first I had ever heard of the accident. This case occurred while I was in Michigan. I have had similar experiences with the Chicago Milwaukee & St. Paul. I remember one day I took a train and the conductor came to me and asked if I had been sent for to go and see a certain case. I replied, no; that I had heard nothing about it. He then told me about the case, and requested me to get off at the next station and go over there. I did so and found the family physician in charge. The fault was with the trainmen, as no instructions were given, and consequently nobody had notified me.

With reference to schools, the only reason why I put in a statement of two or three sentences with reference to schools of medicine, was because I have known men who drew the line on this point, even in railway surgery. I most emphatically believe that the time will come in the near future when physicians will be regarded as physicians, and that they will have their standing, not because of the particular school from which they have graduated, but as men, as honorable men. I think, furthermore, there is nothing in the code of ethics which can be construed by any right-minded person as prohibiting consultation with and ordinary homœopathic practitioner. He is not limited to his own school.

The homœopath uses bichloride and iodoform in surgical work, and he uses quinine as we use it. There are few strict homœopaths, and these few exclude themselves from consultation with other physicians on other grounds.

HOW SHALL WE SECURE THE BEST RESULTS IN TRAUMATIC SURGERY?*

By Hugh Jenkins, M. D., Preston, Iowa.

It is presumed that there are no members of this association who do not practice aseptic or antiseptic surgery and who have not provided themselves with separable instruments with metallic handles which can readily be made surgically clean, a sterilizer by the use of which their suture material, dressings, aprons. etc., can be put in a sterile condition—that is, "like Cæsar's wife, above suspicion," and also a surgical emergency case which can be taken to patients unable to go to the office of the surgeon. These points have already received full consideration in our publication, The Railway Surgeon, and we will proceed to the consideration of a suitable place for operation. To those of our number who practice in the large cities this part of the subject will present but little interest. With the many well equipped hospitals, with their elaborate operating rooms, marble or tiled floors, provided with all the conveniences that genius can devise, the question with them of a suitable place for operation is easily solved. With those of us in small places it is often more of a question and has been to me one of considerable anxiety at times. I would not wish to be understood as taking the position that good work cannot be done under most unfavorable conditions, but it is a fact, that in severe traumatic cases the capability of the surgeon will often be put to a severe test under the most favorable conditions possible. So an operating room, which could be readily cleansed and rendered aseptic at a moderate cost was the end I had in view in constructing the room shown by the accompanying photographs.

I am sorry the light would not permit the best view to be taken, but I will pass them for examination. The inside of the room measures 11 by 13 feet, 9 feet high. The foundation is of stone, the sills of oak, 8 by 10 inches, secured by long iron rods running from side to side. Inside the foundation walls, and nearly up to the top of the sills, earth was filled in; on top of this broken stone was placed, on which was laid a portland cement floor, with a gentle incline to a trapped drain leading outside. Heat is provided by bringing a pipe to a register from the hot air furnace under the main office building. The construction above the foundation is frame; the roof shingle; the walls plastered, and painted, with a mixture of two parts paint, one part best coach varnish, which stands out well on the wall. A base board was made of the cement on the wall, 1 inch thick and 12 inches high. The doors and windows shut against rubber-faced weather strips.

Here I have a room that can be thoroughly washed by taking in a hose, or can be sponged with a bi-chloride solution. No use is made of it except for surgical cases, and it is always ready for immediate use at any time. Perhaps it would be considered a practical point, by those thinking along this line, if I give the cost. It is as follows, including material:

Mason work	$60.00
Carpenter work	60.00
Painting work	25.00
Hardware, drain and furnace pipe	25.00
Total	$165.00

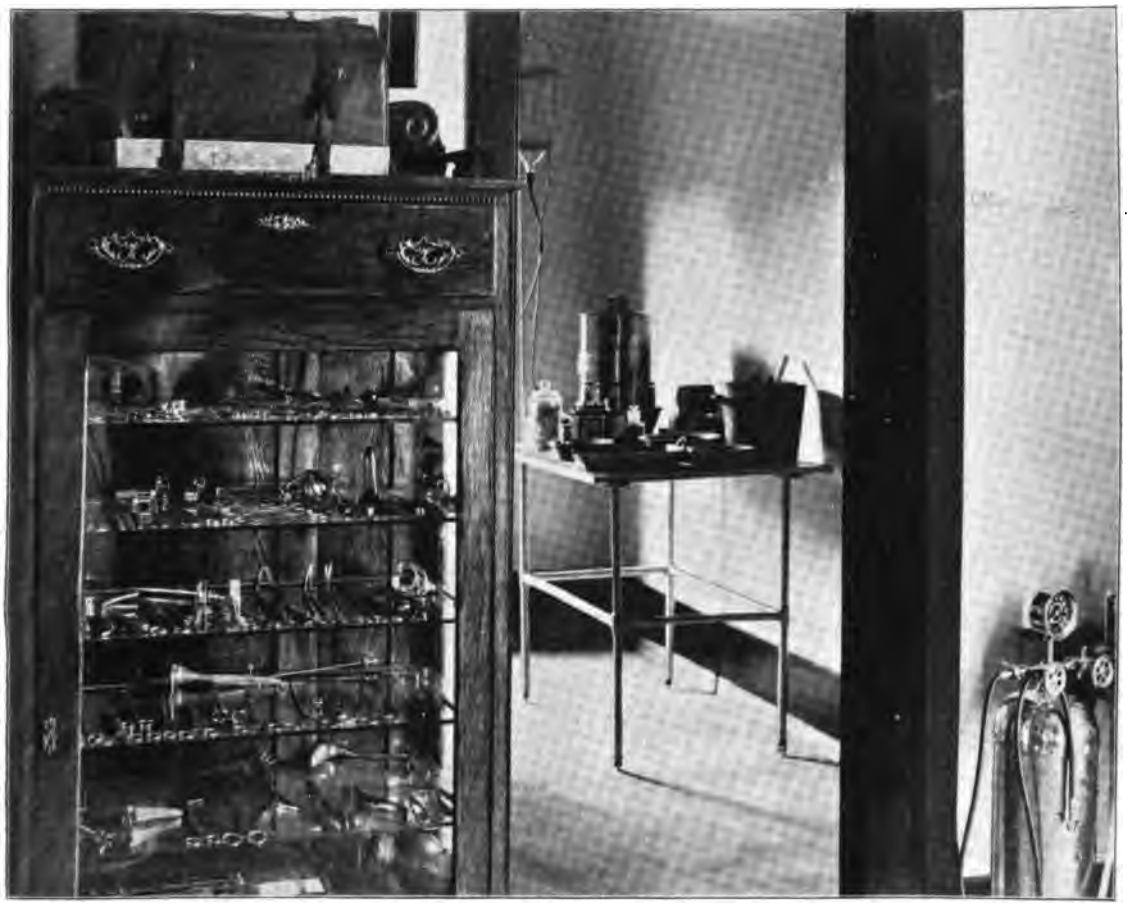
The ground plan shows my office complete, which I consider a model for a country physician. After a use of four years I do not think I would alter it in any way if I were to rebuild. It can be built complete, including operating room, stone foundations and furnace, for $700 at the prices here. There is abundant room for storage in the basement.

Of late there has been quite a movement to substitute aseptic methods of operating for antiseptic ones in traumatic cases. Perhaps the most interesting discussion at the meeting of the National Association at St. Louis this spring, followed the papers of Dr. Outen and Dr. Lamphear, advocating, respectively, asepsis and antisepsis, in rail-

*Read at the fourth annual meeting of the C. M. & St. P. Railway Surgeons' Association, at Chicago, November, 1896.

way surgery. While, undoubtedly, the trend of modern surgical thought is toward asepsis, yet in the class of cases under consideration we will, in my opinion, attain the best results by antiseptic methods. Consider the conditions: The patients are usually at work at the time of the injury. The cutaneous surface has had no preliminary cleaning. Often, if it be a limb, it has been ground into the dirt. Nearly always grease and grime are in the wound. That such wounds can be rendered entirely aseptic and ready for the dressings by simply washing and irrigating with sterilized water is, in my opinion, open to much doubt.

A case in point: A few days ago, C. M. aged 32 years, engineer on a steam thrasher, took the place of the feeder for a few moments; while there the band cutter was drawn over the back of his hand, cutting deeply three fingers. Hemorrhage being profuse, several chews of tobacco were contributed from their mouths by kind bystanders and placed on the wound; the best-spared portion of some one's garment was taken for a bandage, and the patient brought to my office. The hand was covered with dirt and grease from the engine. It was washed thoroughly; irrigated with a 1-2000 bi-chloride solution, approximation secured by sutures and a sterile dressing applied. Result, primary union. I should not have had much confidence in healing without suppuration had I used for washing and irrigation simply sterilized water.



A CORNER OF THE OPERATING ROOM SHOWING CONCRETE FLOOR AND BASE.

I am using the following routine measures in traumatic cases: On receiving the patient I estimate what dressings will be required and place them in the sterilizer in reverse order to that in which they will be needed; first bandages, next cotton, next gauze. Then needles threaded and quilted onto a piece of gauze. Instruments are placed in a carbonate of soda solution and silk for ligatures in a small dish of water and all are boiled. The hands are cleaned afterward again and washed in a strong bi-chloride solution. The

injured parts are then washed clean and thoroughly irrigated with a 1-2000 bi-chloride solution, and all necessary operative measures carried out; the parts are again irrigated, the sterilizer opened, and the sutures and dressings applied with my own hands. With care in the details I then feel confident that all pyogenic germs are destroyed, and that the wound is in an aseptic condition favorable to prompt healing. To sum up: So far as contact with the patient is concerned we should have our person, instruments, and dressings all aseptic. We should destroy sepsis in the wound by antiseptic agents, of which, in my opinion, the most reliable is bichloride of mercury.

I had a case of triple amputation; my work was done in one of those old hotel rooms, and in spite of the surroundings the patient was well at the end of the seventeenth day. Last winter a man was thrown off of the limited express; he lay in the cold for two hours before he was picked up. Both legs were crushed off at the ankle joint, and he was taken to one of the filthiest houses I know of. My work was done in a room in this house and complete recovery followed in twenty days. I do not think it is necessary to have everything in an aseptic condition at the time of operation. If it were, we would have poorer results than we do in our country surgery, and I do not think they have any better results in the city hospitals than we do in the country. Their cases are not of shorter duration than ours, and I know that the surroundings we have to contend with are not aseptic.

INTERIOR OF THE OPERATING ROOM VIEWED FROM THE WINDOW.

DISCUSSION OF DR. JENKIN'S PAPER.

Dr. Thompson: I do not think it is necessary to have the room thoroughly aseptic in which we are working, and we country doctors do not get that kind of room in which to do our work. We get rooms in hotels that are sometimes laden with septic germs. Two years ago

Dr. Egloff: I believe in Dr. Jenkins' paper in so far that we should make as strong an effort as possible to be aseptic. I congratulate

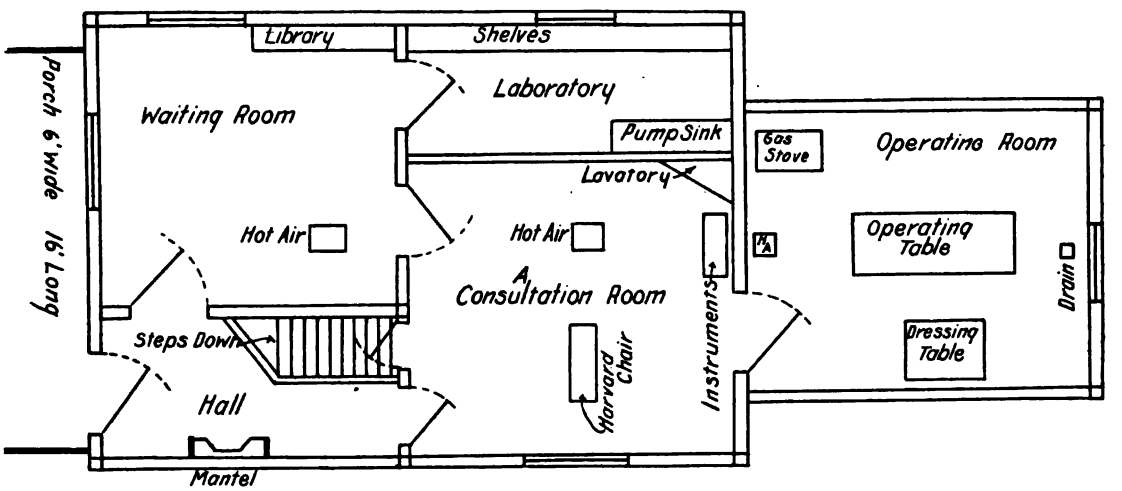
the doctor upon his success in his cases, and I believe with him that we country practitioners should have as good results in the country as do physicians in the city. But we have a great many advantages in the country that they do not have here. In so far as sanitary surroundings are concerned, I think we are better off, yet we should make every effort to have everything rendered aseptic, because we have enough loopholes that we would forget about, and I think we are working in the right direction in doing that. My idea has always been that if we could have small hospitals distributed throughout the country it would stimulate us to do better work, and I believe our results would be better.

Dr. Johnson: There is something about this matter of asepsis that we do not fully understand. Sometimes our cases will recover under the most unfavorable circumstances and surroundings; nevertheless, we should try to be as aseptic as possible. A short time ago a boy in my immediate neighborhood tore his scalp very badly, and the father told me that he sewed up the wound himself with ordinary thread without the scalp ever having been shaved or cleansed and the treatment was followed by an excellent result. There was union by first intention throughout. I do not believe, however, that this is good practice to follow.

Dr. McCoy: We cannot take too much care. As St. Paul said, "Cleanliness is next to Godliness." In considering these cases we must take into account the vitality of the patient. I know of a case of serious scalp wound in a boy who was hurt with a cornsheller. His father did the surgery himself, sewing the wound with common thread. The result was excellent. At the same time this would not be a safe rule to follow. The case occurred in a German family, and the boy was rugged and healthy. We must consider all these things. If we take some frail fellow and treat him in this way he will go to kingdom come.

Dr. W. T. Sarles: I think the whole subject resolves itself into this, that cleanliness is what we are after. If we have an unclean piece of dressing or a dirty instrument, however aseptic the room may be in which we operate, we will have bad results. It would be impracticable to have such a room as the doctor describes for emergency surgery. We can have a surgical dressing case and can make our hands clean and keep everything about the wound and the wound itself clean, and aseptic with the resources we have at hand in any place, no matter how dirty, if we can get a clean sheet. If we render the parts absolutely aseptic we will get results accordingly. It is always well to have as nice and clean a room in which to operate as possible, as it lessens the chances of danger, but it is not so necessary as having the dressings and instruments in an aseptic condition. It is necessary to have such a room as the doctor suggests in places where we do considerable operating. This, I think, is conceded by all.

Dr. Jenkins: I desire to make one or two points in closing. I am living in a small country town where we have no hospital, and I have been operating in rooms in hotels, as the



GROUND PLAN OF OFFICE AND OPERATING ROOM.

gentleman describes, also in railway depots and different places, but I can do my operating in this room and take my patient to the hotel with very much less trouble and leave the patient in better condition than if I take my dressings and instruments over to the hotel and operate there with the inconveniences that would obtain. So I think it answers an excellent purpose in that way.

There is another point. I think we should, if possible, remove our cases of accidental injury from the railway depot. If we are utilizing the waiting room of a depot for an operation we incommode the railway company to a considerable extent and it becomes noised around among the traveling passengers that an accident has occurred and the waiting room is shut up because the doctors are in there performing an operation. If we take the patient away to a place where the surroundings are favorable, we will get better results.

Another point was the matter of cost. When I commenced this I did not know whether it was going to cost me $200 or $800. The cost, however, is within the reach of every surgeon on the system.

In regard to the sterilization of gauze, a physician who does considerable of obstetrical work and uses gauze will find it much more economical to buy his gauze in large quantities and sterilize it. This can be done by placing the sterilizer over a gasoline stove, or, better, a gas stove, and there is no more trouble in using it than a housewife would have in using her tea-kettle. After coming from an operation you can open up your emergency case, resterilize all of your dressings, pack them away and they are instantly ready to be taken to the next case to which you are called.

INJURIES OF BLOOD VESSELS.*

By F. R. Garlock, M. D., Racine, Wis.

The subject upon which I propose to make a few remarks is one of vast importance, as it presents itself in nearly every case which comes before the surgeon in his daily routine. There are wounded arteries or injured veins in every case in which there is solution of continuity of tissues. It is the most frequent injury which the surgeon has to contend with, and no one can afford to ignore the results of injured blood vessels. Wounded vessels are of the greatest importance in all capital operations, although the various means which science has laterly devised have done much to obviate the danger of fatal hemorrhage. Wounded arteries claim greater attention than injured veins, as far greater danger results from their injury. The artery may be divided or it may be bruised and some of its coats weakened, either of which causes great inconvenience and at times great danger. When the coats of an artery have been injured the vessel has been rendered incapable to withstand the pressure of the heart's action and distension results.

In this short paper I cannot go into the discussion of the anatomical structure of arteries and veins, nor allude to all the injuries to which they may be liable, but will limit my remarks to a few cases which have come under my observation, both in railway surgery and in private practice. I have two cases to which I wish to call your attention. One occurred in railway service, the other in my private practice.

The first occurred while I was in the service of the R. W. & O. Railway in the state of New York. A workman, section hand, aged thirty-two, an Irishman by birth, while at work was struck by a lever in the popliteal space of the left knee, which caused an injury to the popliteal artery, and which resulted in an aneurism of that artery. The injury occurred at about 4 o'clock p. m., but he did not consider it of enough importance to discontinue work, and kept on till quitting time at 6 o'clock. After going home and sitting down he was disturbed by a constantly increasing pain in the region injured. Upon examination he discovered a small tumor, as he expressed it, of the size of a robin's egg. He applied a bandage moderately tight and cold water.

In the morning the pain had increased and the tumor was twice as large as the night before. He then sent a messenger for me, and upon my arrival I found a well-developed popliteal aneurism. For a temporary dressing a compress and bandage was applied. This failing to give relief, I decided to put the patient in bed and apply systematic pressure above and below, which was done by means of clamps applied, one just above the tumor, the other just below. The one above was applied for one-

*Read at the fourth annual meeting of the C. M. & St. P. Railway Surgeons' Association at Chicago, November 12, 1897.

half hour and then the one below tightened, after which the one above was loosened and by so doing there was no irritation of the skin and the circulation was effectually cut off in the aneurism. These clamps were operated by two enthusiastic medical students, who took turns in attendance upon the patient. At the end of eight days the tumor no longer gave forth the characteristic sound and no circulation could be demonstated in it. The clamps were gradually removed and at the end of two weeks the case was pronounced cured, or so far benefited that it was admissible for the patient to rise and sit in a chair, and he gradually got around about the house and at the end of four weeks from the time when he took to the bed he was able to resume work. I finally lost track of him for some time, but at the end of a year met and examined him, and the tumor was much diminished in size and causing him no trouble.

The next case to which I will call your attention is one of injury to a small recurrent artery on the posterior aspect of the ulna, and which is a branch of the ulnar artery. The point of injury was at a point about one inch below the point of the olecranon process of the left ulna. A gentleman, while taking a bath, in attempting to change his position in the tub, made a slight slip, and, falling, struck the left ulna against the edge of the tub in such a manner as to break or crush the coats of the recurrent artery found in this region. The skin of the arm at the point of injury was not broken. This artery being small and the skin not breaking did not attract his attention as anything of a serious nature, and he paid no further attention to it 'till some two hours after the receipt of the injury, when he noticed that there was quite a large tumor and fluctuation on the posterior part of the forearm Even then he did nothing for it, not considering it serious, but after taking his dinner he noticed the arm greatly swollen from the wrist to the axilla and about as full of blood as the skin would hold. He then applied for surgical assistance and had the arm bandaged so tightly as to prevent any further hemorrhage, which was successful in stopping the swelling. The bandaging and compression was continued for about three weeks, when the swelling was supposed to be about gone. Next day soreness appeared in the arm and upon examination an abscess was discovered about the elbow with its origin at the point of the orginal injury. Warm applications were then applied and in about two or three days the whole arm was almost as much swollen with pus as it had been with blood at first. The arm was now freely opened at a point two inches above the point of the elbow and also two inches below. On the occasion of the first opening one pint of matter escaped of an unhealthy color and which I have no doubt had resulted from breaking down of the extravasated blood. A drainage tube was introduced and the discharge continued for more than a week thereafter. The swelling gradually went down and recovery was complete. In this case the blood extravasated burrowed between the muscles and when the pus formed it also followed this direction and filled the space which had been occupied by the blood.

DISCUSSION OF DR. GARLOCK'S PAPER.

Dr. Bouffleur: I want to call the attention of members to the fact that there has been a great deal said and written and a great many experiments are being conducted to determine the question as to the advisability of suturing injured blood vessels. You know for a great many years suturing of the veins has been practiced, but the suturing of arteries is a subject which has not received the attention which its importance deserves. Recently some experiments have been made in the end to end suturing of blood vessels of dogs, and little trouble has resulted even where the aorta is divided and sutured. The operation upon the human subject has not yielded, so far, the results we have been expecting—not the universally favorable results found in the lower animal. This can be accounted for, I think, in a large measure by the fact that the limb of a dog has very little to nourish and the obstructing of one blood vessel would not necessarily result in the necrosis of the limb. I know of one instance where an operation has been performed in which thrombosis followed, as we would expect in every instance. It is simply a subject before us at the present time, whether, instead of amputating the limb for the division of a principal blood vessel like the popliteal, it is not possible, by proper procedure, to save the limb by end to end anastomosis of the vessel. The technique has not been completed, but you will find it is well to keep in mind the particular steps now being taken.

The treatment of aneurism, of course, is very interesting. A great many of the older members have run across such cases. A good many will terminate favorably, while others will result in absolute thrombosis, with necrosis of the limb. I am not familiar with any special improvements in the treatment of aneurism.

Dr. Spellman: It seems to me that if I had an injury of that kind I would expect the vessel to be destroyed as far as its circulation below that point was concerned, and if we were not skilled in anastomosis it would be better to cut down and tie the vessel and turn out the clot. It seems to me the suppurative process in such a case would be very dangerous.

Dr. Clark: Do I understand the doctor to say that compresses were applied upon the popliteal artery, both above and below the artery?

Dr. Garlock: Yes. I used what is known as clamps, one immediately above and the other immediately below.

Dr. Clark: I don't clearly understand what object the doctor had in placing the compress below. I don't understand what was to be gained by having a compress both above and below the tumor.

Dr. Garlock: The object in placing one below and one above is this: With only the one above, the continuous pressure might have resulted in injury and irritation to the skin and other soft parts. By changing them and maintaining the nutrition of the parts in a healthy condition we had circulation through the tissues.

Dr. Sugg: The point suggested was in my mind, whether ligation would not be better and safer than compression. As Dr. Garlock said, the object of the clamp was to cut off the circulation; if the lower clamp was applied before the upper one was relieved it seems to me the circulation was as immediately and permanently obstructed by the clamp as it would be by a ligature. Under the present knowledge in surgery I think I would recommend a ligature in preference to clamps.

Dr. Gardiner: As you are asking for testimony on this question it would not be out of place for me to relate a case here on the question of ligating the popliteal for a wound of an artery lower down. A boy stabbed himself accidentally about three and a half inches below the lower edge of the patella, on the inner side of the leg close to the tibia and wounded an artery near the bifurcation of the tibia. The wound was dressed and a compress placed upon it to restrain the hemorrhage, which it did for about 24 hours, when the surgeon was called again and found it bleeding profusely; he put on a compress and after another 24 hours he and another surgeon were compelled to ligate the popliteal at about the usual place. Everything went on very well for three or four days; at that time I was called in consultation and found the artery had bled from the original stab wound and also the surgeon's wound, but it had ceased when I came; we re-applied the dressing. In 24 hours I was called again and it was bleeding again, more from the popliteal space than from the original wound. We were called again in 24 or 36 hours; it had been eleven days since the original injury, and we found altogether a horrible condition of things. That was about six or seven years ago. I had just returned from the city, from some post-graduate work, and was quite anxious to save the leg. It was very septic and the question of going down into the original stab wound and searching for the bleeding vessel if possible and of tying the femoral or amputating the leg was what confronted us. Finally we decided to amputate the boy's leg and did so and saved his life. We thought we were justified in not tying off any more vessels. Of course we could have tied the femoral but that was deemed unwise, considering the septic condition of the popliteal space above and below. The question was whether tying the popliteal originally was better surgery, or to have gone down and tied where the wound was originally made. It seemed to me useless to have the boy's leg sacrificed, yet at the time I did it it seemed utterly useless to do anything else. There were really some very important points in the case.

To Clean Rusty Instruments.

Brodie gives the following as an effective method of cleaning rusty instruments:

"Fill suitable vessel with saturated solution of stannous chloride (chloride of tin) in distilled water. Immerse the rusty instruments and let them remain over night. Rub dry with chamois after rinsing in running water, and they will be of a bright silvery whiteness."—Journal British Dental Association.

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THE DOCTOR'S OFFICE.

The old saying that we can judge a workman by his chips has a broader and deeper meaning than would at first seem apparent. Unquestionably the character and appearance of a workshop always furnish a pretty good indication of the painstaking care and orderly execution of the workman, or the absence of these qualities. We have often been impressed with the fact that there is a marked individuality in doctors' offices, provided, of course, the offices are occupied individually and not by a number of different physicians at different hours of the day, as in Chicago and some other large cities. Illustrative of the impression which appropriate surroundings of the doctor make upon the laity, we once heard a very eminent lawyer remark, upon going into the office of a young Chicago physician: "That office will get business for the doctor. It is just as neat and clean as it can be and the fittings are appropriate, even to the smallest picture. There is character in it; it is all right." It is an unfortunate fact that sometimes the doctor's office is simply a convenient or possible place for the reception of patients, little thought being given to cleanliness or comfort, to say nothing about the artistic and esthetic surroundings, which certainly do contribute to the daily and hourly life of the intellectual worker, and which form a part of his moral atmosphere.

In other columns we publish a valuable contribution from the pen of Dr. Hugh Jenkins of Preston, Ia., and incidentally a plan and illustrations of his office and operating room. His library and desk and pictures and rug are not shown, but we can easily believe that they are there and that all of the surroundings are appropriate and characteristic of a man who cares enough about doing the best work that can be done to provide an aseptible operating room and the very best, though possibly the simplest, modern appliances for doing surgical work.

PAIN.

Pain, sensation, impression and perception are but relative degrees of expression of one and the same process of functional life. They are all given to man for the broad purposes of self-protection, warning and information. The first (pain) comes with the idea of distress, the idea of injury. Sensation may be pleasurable or painful; impression the same, but more of a psychic nature, while perception refers to interpretation and reason. Distress is defined as extremes of pain or suffering, anguish of mind or body. Pain is undoubtedly an indication of higher organization and the higher man rises in the moral scale the more his sensibility increases, and it can be truly said that the influences of civilization are all tending in the direction of an increased sensibility.

Man feels and notices more things and is more frequently the subject of pain than in the early period of his existence.

Pain appears to be a more important con-

sideration to the surgeon of to-day than formerly. The highest ideal of the healing art is the avoidance of pain, and it should ever be the purpose of the wise surgeon to avoid inflicting suffering. Indeed, the most effective and the best function of his life is not to give pain but to relieve it, realizing fully the value of pain in a diagnostic sense, that it is ever a signal of distress, an outcry of suffering and injured nature, and demands relief.

Many advocate a kind of educational suffering for man, a forbearance of outcry, the supposed manly tolerance to pain. We have ever viewed this as nonsense. We once heard an old observing rural practitioner say: "The baby that cries quickest with the belly-ache gets cured the quickest." We believe that pain was intended to make man give vent to his suffering, and when any man fails to do so he suppresses his saving function. Physicians and surgeons should teach their patients to describe their pains and not to hide them as trivial. Intense pain may be the record of the torture of a single nerve, while the dull ache may involve a whole territory.

Again we venture to assert that the best and the most successful of surgeons is the one who never inflicts pain when it can be avoided and who pays most attention to the significance of pain. Many surgeons study pain in a somatic more than they do in a psychic way. It is as essential to study the various phases of psychic as of bodily pain. Mental shocks in the weakened and suffering have debarred cure. It is not necessary to create a catastrophe to shock those mentally weak, but we venture to assert that the rough indifference of the surgeon and the display of instruments have, combined, killed more than the mere operation. Trivialities carefully studied lead to perfection. Picture, if you will, a weak, delicate, suffering woman, whose brain dwells in morbid sensibility. She comes to a surgeon for operative procedure. Our lordly man of the knife has not time to indulge in the ordinary amenities of life and examines his patient in orderly, business fashion, without the faintest show of sympathy or feeling, and tells in the shortest possible way what has to be done, and honestly says that he cannot tell what the result may be. He has not time to soothe, placate or encourage. The time comes for the operation. The patient approaches the table in painful and nervous apprehension; nothing is said to encourage her. The chloroform is given without a soothing suggestion. Here is a mind that a mental shock can and will influence violently, and this mind goes under the influence of chloroform in a state where a morbid suggestion may be the means of causing grave results. It is a poor surgeon who cannot soothe and quiet a pained mind as well as a pained body. The surgeon is more often the unconscious, inflicting agent in operative work than he thinks.

A surgeon unacquainted with psychic pain is only half educated, and in truth the surgery of to-day becomes more mechanical and less soulful. Narrow, technique surgery makes most of its successes through the thoughts of other brains than that of the operator. If genius were required to make surgeons, then indeed they would be very few and far between. Technique is mechanical, not intellectual. The surgeon should not only be skilled in technique, but should have knowledge of every element of his art. He should be a student of the mind as well as of the body, and success only comes in its best form when we interpret every condition and surrounding of the patient aright.

Woman's Inferior Sensitiveness to Pain.

Dr. Ottolenghi (Centralbl. f. Nerv. u. Psych., No. 7) reports the tests made with Edelmann's faradimeter of the sensitiveness to pain and the endurance of pain in six hundred and eighty-two women. He finds that women are less sensitive to pain than men, and that this sensitiveness is less in early life, increases to the twenty-fourth year, and decreases after that. The higher classes are most sensitive and the degenerate least. He found the latter class very obtuse to the sensation of pain. Endurance of pain varies between much broader limits in women than in men, reaching a maximum far beyond the masculine limit, possibly due to the "greater suggestibility" of the female sex. General sensibility reaches the highest point in the nineteenth year. He concludes that sensitiveness to pain stands in close relation to the "psyche," while "general sensibility" depends upon the peripheral nerves. He considers woman's comparative insensibility to pain as a sign of her inferiority to man, as the uncivilized and degenerates are least sensitive. He attempts to prove a connection between this characteristic and her longevity.—Medical Record.

Notes of Societies.

The Medical Society of the Missouri Valley.

The next meeting of the Medical Society of the Missouri Valley will be held at Lincoln, Neb., on March 18, 1897.

The following is the scientific program:

"Report of a Few Interesting Cases," Dr. George Nusum, Honey Creek, Ia.

"Report of a Case," Dr. W. L. Dayton, Lincoln, Neb.

"A Case of Spasmodic Tic," Dr. John Riley, Exira, Ia.

"Trachelorraphy, with Exhibition of a New Instrument for Its Performance," Dr. W. O. Henry, Omaha, Neb.

"The Etiology and Prevention of Puerperal Fever," Dr. W. J. Findley, Atlantic, Ia.

"Treatment of Abortion," Dr. V. L. Treynor, Council Bluffs, Ia.

"Post-Operative Mania," Dr. A. F. Jonas, Omaha, Neb.

"Prolapse of the Cord," Dr. A. D. Wilkinson, Lincoln, Neb.

"Torticollis; Report of Case," Jas. W. Cokenower, Des Moines, Ia.

"Some Thoughts on the Physical Aspect of Crime and Wrongdoing," Dr. F. S. Thomas, Council Bluffs, Ia.

"Cerebral Abscess; Operation, Recovery," Dr. J. E. Summers, Jr., Omaha, Neb.

"Metastatic Malignant Disease of the Cord," Dr. A. R. Mitchell, Lincoln, Neb.

"Therapeutic Aids in Surgical Diseases," Dr. C. C. Allison, Omaha, Neb.

"Is Phlebotomy a Lost Art?" Dr. W. H. Christie, Omaha, Neb.

"Aseptic Midwifery," Dr. G. H. Simmons, Lincoln, Neb.

"Adeno-Sarcoma of the Nasal Septum," Dr. S. F. Owen, Omaha, Neb.

"A Plea for Greater Accuracy in Diagnosis," Dr. M. H. Everett, Lincoln, Neb.

"The Diagnosis of Malignant Diseases of the Stomach," Dr. W. F. Milroy, Omaha, Neb.

"Unusual Sequela of Typhoid Fever," Dr. H. J. Wynnett, Lincoln, Neb.

"Retroversions of the Uterus," Dr. Ewing Brown, Omaha, Neb.

"Anæsthetics in Obstetrics," Dr. E. J. Smith, Harlan, Ia.

Officers for 1896-97.—President, H. B. Lowry, M. D., Lincoln, Neb.; first vice-president, Rebecca Hanna, M. D., Red Oak, Ia.; second vice-president, R. R. Williams, M. D., Manning, Ia.; treasurer, T. B. Lacey, M. D., Council Bluffs, Ia.; secretary, D. Macrae, mons, M. D., A. D. Wilkinson, M. D., A. R. Jr., M. D., Council Bluffs, Ia.

Committee on Arrangements.—G. H. Sim-Mitchell, M. D., Lincoln, Neb.

The Tenth Annual Meeting of the National Association of Railway Surgeons.

PRELIMINARY PROGRAMME.

The following is a list of the members of the National Association of Railway Surgeons who have already pledged papers for the annual convention to be held in Chicago, May 4, 5 and 6, 1897, with the titles of their contributions as far as announced:

Dr. John Punton, Kansas City, Mo., "Treatment of Functional Nervous Affections Due to Trauma."

Dr. Frank H. Caldwell, Waycross, Ga., "Relief and Hospital Departments."

Dr. H. L. Getz, Marshalltown, Ia., title not announced.

Dr. Solon Marks, Milwaukee, Wis., title not announced.

Dr. W. T. Sarles, Sparta, Wis., "Traumatic Infections and Their Treatment."

Dr. Jabez N. Jackson, Kansas City, Mo., title not announced.

Dr. G. P. Conn, Concord, N. H., "Relation of Railway Companies to State Boards of Health."

Dr. C. W. Tangeman, Cincinnati, O., "An Exhibition of the Various Devices for the Determination of the Color Sense of Railway Employes."

Dr. A. L. Clark, Elgin, Ill., "A Case in Practice."

Dr. A. C. McClanahan, Red Lodge, Mont., "Plaster of Paris and the Difficulty of Applying it to Recent Fractures."

Dr. W. R. Hamilton, Pittsburg, Pa., title not announced.

Dr. Thomas H. Briggs, Battle Creek, Minn., "Problems."

Dr. A. C. Wedge, Albert Lea, Minn., title not announced.

Dr. Rhett Goode, Mobile, Ala., "A Case of Osteo-sarcoma from Railway Injury."

Dr. E. W. Lee, Omaha, Neb., "The Treatment of Burns."

Dr. A. I. Bouffleur, Chicago, Ill., title not announced.

Dr. W. A. McCandlass, St. Louis, Mo., "Brain Abscess."

Dr. T. O. Summers, St. Louis, Mo., "Shock in Its Relation to Permanent Injury."

Dr. W. B. Outten, St. Louis, Mo., title not announced.

Dr. A. L. Fulton, Kansas City, Mo., "The First Care of the Patient in Railway Traumatism."

Dr. M. E. Alderson, Russellville, Ky., "Medicine and Surgery with Their Votaries of Today."

Dr. Geo. W. Hogeboom, Topeka, Kan.,

"The Beneficial Influence Exercised by Railway Hospital Associations Upon the Morals of Employes."

Dr. C. B. Stemen, Fort Wayne, Ind., "Accidental or Railway Surgery."

Regeneration of the Axis-Cylinders of Divided Peripheral Nerves.

Ziegler has published in the Archiv f. klin. Chir., vol. li, part 4 (abstract in Centralbl. f. Chir., No. 46, 1896), an account of his laborious investigation into the subject of regeneration of divided nerves in dogs, rabbits, rats and frogs. According to most histologists and embryologists, an active growth from the divided ends of the axis-cylinder ushers in the regeneration of the cut nerve. Ziegler claims, on the contrary, that the old axis-cylinder plays merely a passive part, and that the real regeneration is a neuroplasma rich in nuclei, which sends out protoplasmic fibrillæ, which later become differentiated into axis-cylinders and the other essential components of a nerve.

After division or constriction of a nerve, degeneration takes place in its peripheral and, to a less extent, in its central end. This degeneration is really a vital act, and predisposes to the absorption of the material of the degenerated fiber; meanwhile the sheath of Schwann—the neurilemma—is stimulated to active growth, and from this springs the protoplasm rich in cells, which absorbs the degenerated fibers and by the growth and differentiation of which the new nerve is formed. This sheath of Schwann cannot, therefore, says Ziegler, be of connective-tissue origin and nature.

The formation of new nerve-fiber takes place only in the central stump of the divided nerve, in intimate connection with the border of the degenerated area; and the union of an old fiber with a new one is accomplished by means of a nucleated drop of protoplasm, which appears in the end of the old nerve-fiber in close association with the sheath of Schwann.

The differentiation in the new protoplasmic strings appears early. First, as the finer fibers are recognizable, the axis-cylinder makes its appearance. Sometimes two or three of them appear side by side in a single fiber. Their union with the old axis-cylinders is a secondary process. After the axis-cylinder appears in the new protoplasm, the medullary sheath becomes differentiated about it, and the nuclei assume a more superficial position, giving the appearance of a surrounding membrane to the newly formed fiber. This grows thinner and becomes the sheath of Schwann.

Notes, News and Personals.

It is reported in the daily press that Dr. G. W. Hogeboom has been removed from his position as chief surgeon of the Santa Fe system. We sincerely hope that there is some mistake.

A special dispatch to the St. Louis Globe-Democrat from Sedalia, Mo., and bearing date of March 2, says that Dr. E. F. Yancey, who has been connected with the Missouri, Kansas and Texas hospital department since 1885 and who has been chief surgeon for the company since 1890, has been appointed to the position of chief surgeon of the Atchison, Topeka & Santa Fe railway, with headquarters at Topeka, Kan. He will take charge of his new post on the 15th inst. and will have five hospitals under his supervision.

A later dispatch to the St. Louis Republic says that Dr. Yancey, at the earnest solicitation of the officials of the Missouri, Kansas and Texas Railway, has withdrawn his resignation as chief surgeon of the system and he will not accept the offer of the Santa Fe.

We are also indebted to the daily press for the following: Dr. J. P. Kaster of Albuquerque, N. M., now chief surgeon of the Atlantic and Pacific, has accepted the same position with the Santa Fe, and will make his headquarters at Topeka. It is probable Dr. Worth of Albuquerque will succeed him on the Atlantic and Pacific.

Dr. W. C. Gibson, chief surgeon of the G. S. & F. Railway, died recently at his home in Macon, Ga., in the thirty-ninth year of his age. He was an extremely active and busy man and his untimely death is attributed to overwork.

At a recent meeting of the board of trustees of the Jefferson Medical College, Philadelphia, Dr. J. Chalmers Da Costa was elected clinical professor of surgery. Dr. Da Costa has been connected with the college for many years, and has recently been demonstrator of surgery and chief of the out-patients' department. The new appointment is made in recognition of his long service and valuable contributions to surgical literature.

Sir Spencer Wells, the well-known surgeon and ovariotomist, died at Cannes, France, on the first day of the present month. He was the eldest son of the late Mr. Wells of St. Albans, Hertfords, his mother being the daughter of the late Mr. Wright of Richmond, Surrey. He was born in 1818 at St. Albans, and educated at Trinity College, Dublin. His first medical experience was in the infirmary at Leeds, but he subsequently studied in the Anatomical School at Dublin and at St. Thomas' Hospital, London. In 1841 he be-

came a member of the Royal College of Surgeons, and three years later was elected one of the honorary fellows. At the close of the Russian-Turkish war, in which he officiated as naval surgeon, he returned to England and revived the operation with which his name has been chiefly associated, and ultimately became surgeon to the Samaritan Hospital for Women. In April, 1883, in acknowledgment for "distinguished services rendered to the medical profession and to humanity," Her Majesty conferred upon him the honor of a baronetcy.

Under the auspices of the railway branch of the Young Men's Christian Association at Utica, N. Y., the local surgeons have been given a series of lectures to railway men upon the subject of "First Aid to the Injured." Dr. J. G. Hunt, surgeon for the Ontario & Western railway, recently gave the men a very practical talk upon the dressing of wounds and the treatment of shock and hemorrhage in the absence of a surgeon, or until his arrival.

Dr. Haldor Snévé of St. Paul, Minn., has been appointed chief surgeon of the Chicago & Great Western Railway, to succeed Dr. Perry H. Millard, recently deceased. Dr. Millard died at Johns Hopkins Hospital in Baltimore, February 1, of pernicious anæmia. He was born in the state of New York in 1848 and was graduated from the Ogdensburg Educational Institute. He studied medicine in Rush Medical College and graduated in 1872. He then spent several years in the practice of his profession at Stillwater, Minn., afterward removing to St. Paul. At the time of his death he was Dean of the College of Medicine and Surgery at the Minnesota State University. He was an aggressive advocate of higher medical education and it was mainly through his efforts that the present laws regulating the practice of medicine in Minnesota were enacted. The following resolutions were passed by the Faculty of his college:

The faculty of the College of Medicine and Surgery of the University of Minnesota records with sincere regret the untimely death of its dean, Dr. Perry H. Millard. In his death, a loss is sustained, not by this faculty alone, but by the medical profession of the state of Minnesota and by the cause of medical education throughout the country. He was a self-made man of large natural resources, of indomitable energy and perseverance, of unswerving devotion to his chosen purposes. And those purposes had, at heart, the good of his profession. To that profession he devoted twenty-five years of his life, achieving an enviable success in its service. He filled many positions of trust with faithfulness and places of honor with modesty. His services to the state of Minnesota are written upon her statute books and in the history of her medical institutions. He was the author and the inspirer of the laws which have governed the practice of medicine in the state and particularly of that progressive measure known as the Minnesota Medical Practice Act, which has become the type of legislation for over half the states of the Union. He was one of the most active organizers and promoters of the American Medical College Association, a body which has done much to elevate the average standard of medical teaching in this country. His most signal service was in the projection, organization and development of the Department of Medicine of the University of Minnesota. It was in his brain that this institution, which has taken rank among the foremost professional schools of America, first took shape. It was his influence which secured the surrender of the charters of those private colleges which united in its establishment. It was largely through his unceasing labors and his persistent enthusiasm that it was placed upon the university campus beneath the roof of Medical Hall. It was his first ambition, his daily duty, his well justified pride, to forward its interests throughout the years of his fatherhood of its faculty. He passed from its immediate service under the inevitable compulsion of a death-warning he had too long refused to heed, to a death-summons which commands the sorrow of his associates and inspires this memorial "to the duty he has wrought."

Cyrus Northrop, LL. D., Prest.
John F. Fulton, M. D.
Parks Ritchie, M. D.
R. O. Beard, M. D.
A. W. Abbott, M. D.
C. L. Greene, M. D.
H. M. Bracken, M. D.
Committee.

Incisions of Face.

Incisions made in the skin of the face should be placed where there is a shadow, or in the bottom of the furrows produced by the habitual expression of the patient. When this cannot be done, the incision should be parallel to the facial line rather than across it. A slightly curved incision makes a less conspicuous scar than a straight or abruptly curved one.—Roberts.

A Lawyer on a Physician's Diagnosis.

A referee in habeas corpus proceedings for the release of a patient in one of the state hospitals for the insane recently reported to the Supreme Court that the man is not insane. A physician in the hospital stated that the man was suffering from acute mania, but the referee asserted that the diagnosis of the witness was worthless.—Medical Record.

Extracts and Abstracts.

Amputation With Periosteal Flap in the Lower Third of the Leg.

At a recent meeting of the Practitioners' Society of New York Dr. Joseph D. Bryant presented an illustrative case of amputation with periosteal flap in the lower third of the leg, according to a method which he had practiced in more than a dozen cases in this locality. The flap was made a little longer than a fourth of the circumference of the limb at the point of amputation, and included the periosteum attached to, not dissected from, the soft parts. In suturing the flaps no stitches were put into the periosteal portion, this being simply folded over the end of the bone. The advantage of the method lay in the fact that it gave a freely movable and painless stump, which allowed the patient to wear an artificial limb with comfort. Some of the fourteen patients whose legs had been amputated in the lower third in this manner had worn an artificial limb within a month after the operation. In the case presented, the operation was done for necrosis of the tibia. A diagram was shown of the condition found at autopsy in the first case which he had operated upon in this manner, the patient having subsequently died of malignant disease. What little cicatrix which the method of operating had left had become almost entirely absorbed.—Medical Record.

Hypodermo-Clysis In Severe Railway Injuries Requiring Multiple Amputation.*

By James Evans, M. D., Florence, S. C.

Wounds inflicted by railways are always serious, inasmuch as the various tissues involved are irreparably injured and usually require removal. It is difficult to form a correct idea of the extent of the injury as the external appearance of the wounded part does not always indicate the loss of vitality it has sustained, and the damage to the tissues is only revealed afterward by the more or less extensive sloughing which takes place in them. Sometimes in the examination of a limb, more especially when the bones are but slightly injured, only a trivial wound may be seen, yet the cellular and muscular tissues beneath the skin may be injured beyond the possibility of repair, and free hemorrhage is taking place from their torn and lacerated vessels. Considerable shock always accompanies these injuries, and when attended by hemorrhage the depression of the vital forces is often so profound that the condition becomes one of exceeding gravity. If the injuries are multiple and of a character so serious as to require an operation for their repair, or removal, the condition is much intensified, and correspondingly greater difficulties must be encountered in our efforts to preserve life. To save life under these circumstances requires prompt and decisive action on the part of the surgeon, and there is nothing which occurs in practice more difficult to determine than the right course to pursue in an emergency of this kind. The victim of one of these railway accidents is brought to the surgeon in a state almost moribund, with cold extremities, and a weak, small and rapid pulse, almost imperceptible to the touch; he is restless, covered with clammy perspiration, and has sighing respiration and is in a condition of semi-unconsciousness. Formerly it was a difficult matter to decide what course to pursue in regard to patients in this condition. The combined effect of the anæsthetic, and the shock which would follow an operation of any description, added to the existing profound depression of the heart and nervous system, would almost inevitably prove fatal, yet to defer it death would certainly take place from the more or less hemorrhage that was continually sapping the patient's strength. Usually when operations were performed under such circumstances, a fatal result followed. Now, however, a very different termination of these cases can confidently be anticipated by a timely resort to hypodermo-clysis. There are cases where the hemorrhage has been so excessive that the system drained of the minimum amount of blood compatible with life that the only remedy that offers the slightest prospect of preserving life is the speedy and direct transfusion of the blood of another person or an animal into the veins of the sufferer. But in the great majority of instances which come under our notice in practice, the transfusion of normal, warm saline solution into the subcutaneous cellular tissue answers every purpose and is attended with the happiest result in saving life while it is free from many dangers inseparable from the use of the former. Another advantage it possesses is the materials for its preparation are always available and can be easily obtained in almost every locality, and be prepared in a few minutes. It is not necessary to weigh the salt or take the temperature of the water, all that it requires is to put a teaspoonful of salt into a pint of warm water, as hot as can be well borne by the hands when immersed in it. There is some choice to be made in the selection of the spot for the injection, and for some reasons the left side of the chest, in the subaxilary space, is preferable to any other, as it is near the heart, and the injection acts as a powerful revulsive and counter-irritant to that organ, increasing rapidly the force and volume of the pulse, caus-

*Read before the Southern Surgical and Gynecological Association, Nashville, Tenn., November 10-12, 1896.

ing deeper respiration and restoring sooner than when injected elsewhere, warmth and color to the surface of the body. The injection should be given either for the relief of shock or hemorrhage, as it will relieve the one and stanch the other, preventing further loss of blood. As soon as reaction occurs give the anæsthetic and proceed with the operation if one is necessary, and continue the injection from time to time until it is concluded, if there is any faltering of pulse. As much as 40 ounces or more may occasionally be used with advantage. As yet, the mode of action of the injection of hot saline solutions on the economy has not been studied with the care and industry such an important subject deserves, and we are not in a position to form an opinion of the metabolic changes wrought in the cells of the body which enable them to afford such speedy relief to nervous shock and hemorrhagic depression. Sir George Johnson attributed the stage of callapse in Asiatic cholera to the contraction of the cells of the lungs caused by the specific poison of that disease circulating in the blood, and it may be that the semi-conscious state, the weak heart and shallow perspiration are due to a poison generated by deficient metabolic action caused by shock and a deficient blood supply, and that the relief afforded by hot saline solutions is, owing to the restoration to the circulation, of a normal quantity of fluid, and also the dilution of the poison circulating in it. Whichever it may be, there cannot be any doubt that it is incomparably superior to any other remedy for the relief of the depressing effects of shock and hemorrhage.

The narration of a few cases which have recently occurred in my practice will convey a better idea of the prompt relief of all distressing symptoms which follows the use of this remedy.

Case I: A healthy boy, aged 14, in attempting to jump from a railway train, while in motion, was thrown down and his left arm and hand horribly crushed. As the accident occurred some distance in the country, three or four hours had elapsed before he was brought to me. The hemorrhage had been quite free and was still going on to some extent. He was restless, unconscious, cold to the hips, with a small flickering pulse and sighing respiration. A rubber band was thrown around the limb to restrain further hemorrhage and a hot saline injection administered. In a short time the body regained its warmth, the pulse acquired considerable force, and consciousness was restored. An anæsthetic was then administered, the limb amputated, the pulse remaining fair and respiration good until the completion of the operation. About six ounces was injected. Speedy recovery followed.

Case II: Negro man, aged 28, run over by a locomotive, crushing the left foot and the right foot and leg. Saw the man an hour and a half after the accident. The hemorrhage had been quite profuse, the lips and tongue pale and exsanguined, pulse exceedingly rapid, small and scarcely perceptible. There was considerable embarrassment of respiration and the mind wandering and unable to tell anything about the circumstances of the accident. As soon as a warm saline solution could be prepared it was given by transfusion into the subcutaneous cellular tissue in the subaxillary space of the left chest. Nearly sixteen ounces were administered before reaction took place and the pulse had recovered sufficient volume and force to make it safe to proceed with the amputation of the limbs. Chloroform was administered and the limbs amputated, the left just above the ankle, and the right at the point of election below the knee. Several times during the operation the pulse became extinct and the respiration so much embarrassed that it became necessary to continue from time to time the injection until the operation was completed and the wounds dressed. More than 40 ounces were injected into this man, with the happy effect of maintaining in him a pulse of fair force and tension, during the operation. Rapid convalescence and recovery followed in this case.

Case III: A negro man, aged 19, of fine stature and robust constitution, jumped from a rapidly moving train at midnight, was thrown on the track and run over, crushing the toes and metatarsal bones of the left foot, the bones forming the right ankle were crushed, the posterior tibial artery severed, and the muscles of the subcutaneous tissues of the entire limb below the knee were torn and lacerated and black from the infiltration of extravasated blood. This man was not seen till several hours had elapsed from the time of the accident, and was found in a state of profound collapse, due to shock and the enormous amount of blood which he had lost. Further hemorrhage was somewhat controlled by rubber bands thrown around the limbs just above the wounds, and a hot saline injection given in the subaxillary space on the left chest. Twenty ounces of the solution was transfused subcutaneously before reaction occurred. It was continued until warmth was restored to the body, consciousness had returned and the pulse had recovered sufficient force and steadiness to make it safe to administer an anæsthetic and proceed with the amputation of the limbs. Syme's operation was performed on the left foot, while the destruction of the soft tissues of the right leg was so extensive as to make it necessary to amputate just above the knee. In this case it became necessary to continue the injection of the warm saline solution until the close of the oper-

ation in order to maintain the strength of the patient and prevent threatened heart failure. It required 32 ounces or more to do this.

Anyone who has witnessed the marvelous effects of the subcutaneous transfusion of warm saline solution in the relief of the collapse from shock and excessive hemorrhage can no longer doubt that it is incomparably the best remedy ever suggested for this condition, and that it has been instrumental in rescuing many from impending death that otherwise would have perished. Soon it will be required of every physician who accompanies an emergency ambulance in our large cities to be provided with the necessary appliances for the administration of this simple remedy in the event it becomes necessary. It should likewise form a very close essential part of the armamentarium of the military surgeon and the men under his charge in the rear of the line of battle who render first aid to the wounded should be taught when and how to use this remedy and be provided with some simple contrivance for administering it. Each one could be provided with a small alcohol lamp, a few feet of rubber tubing with a large sized hypodermic needle and in an emergency even an ordinary canteen could easily be improvised for use. It is pleasant to contemplate how many lives will be saved in future wars by this simple and effective remedy who in the past were left on the field of battle to die without assistance.—Medical Review.

A Case of Foreign Body in the Ear.

By Frederick N. C. Jerauld, M. D., New York.

Although clinical statistics show that foreign bodies in the external auditory canal are not so frequent as might at first be supposed, they are common enough to be frequently met with in general practice. In fact, the general practitioner is called upon to extract the foreign body as frequently if not more so than is the specialist.

The ones that usually fall into the hands of the specialist are those cases in which the foreign body has been in the ear for some little time, and has not given rise to any very active symptoms in the beginning. Let a man get a bug in his ear, he will not stop to look for a clinic or a specialist, but will go at once to his family physician.

In twenty-seven hundred and eighty-four cases treated in the New York Eye and Ear Infirmary, a foreign body was found in only thirty cases, and Dr. Albert H. Buck, clinical professor of diseases of the ear in the College of Physicians and Surgeons, New York City, says his records show only about one-half of one per cent.

These are, however, the records of the specialist. Could we get a record of all ear cases treated in New York City, both by specialists and general practitioners, the percentage of foreign bodies would undoubtedly be much greater.

All forms of foreign bodies found in the ear might be divided into three classes, according to the character of the foreign body.

The first class consists of sticks, pebbles, peas, beans, beads, lead from pencils—in fact, anything with which a child might play. This class is the one most frequently met with, and the patient is usually a child. The foreign body may have gotten into the child's ear while the latter was at play, or, as frequently happens, been put in by the child of his playmates.

The second class consists of wads of cotton, which are put into the ear by the patient as a protection. This class is usually found in old people. They put one wad in the ear; then, forgetting that it is there, put another on top of the first. The first wad is thereby pushed into the auditory canal, forgotten, and may remain for a longer or shorter time, until finally the patient begins to grow deaf.

The third class consists of various forms of insects, such as the fly, bedbug, waterbug, etc. They may be found with equal frequency in children and adults, and usually gain access to the ear while the patient is sleeping.

A patient with a bug in the ear would naturally be aware of its presence, and would go at once to a physician; whereas an old man with a wad of cotton in his ear would not be aware of its presence, and would not consult a physician until he began to notice that he was growing deaf.

A child is apt to go for months with a foreign body in the ear, provided it is out of sight and gives rise to no pain. As the ear-wax collects on the foreign body, the canal becomes filled, and then it is that the mother notices that the child is growing deaf and consults a physician.

It is exceedingly rare for an adult to get a foreign body of the first variety in the ear and not be aware of its presence. Such cases do, however, occur, and I refer below to one of that kind which came to my notice a short time ago.

Mr. L., aged 26, until this fall had never had any trouble with his ears, and his hearing had always been perfect. He noticed in September that he was growing rather hard of hearing in his left ear. The deafness increased to such an extent that he decided to consult a physician, and came to me on October 24. He had suffered absolutely no pain or discomfort other than the deafness. The latter had increased to such an extent that a person standing on his left side and speaking in an ordinary tone was heard with difficulty.

On examination I found a ball of wax tightly

lodged between the drum membrane and the anterior wall of the meatus. It was dislodged with some little difficulty, and upon examination was found to contain a small, white, irregular pebble, about the size of a hypodermic tablet.

Mr. L. was very much surprised to find that he had a pebble in his ear, and for some time was unable to account for its presence. He could not remember ever having got anything in his ear or ever having suffered the slightest discomfort. He said that in summer, while bathing, he would frequently lie on the sand and let the surf break over him. We therefore came to the conclusion that the pebble must have been driven into his ear by the force of the water.

If such is the case—and it undoubtedly is—Mr. L. carried that foreign body in his ear for over two and one-half months, as he had not been to the seashore since the latter part of July.—Medical Record.

Nerve Grafting.

Dr. Robson reports (British Medical Journal, October 31, 1896) a case admitted under him seven months after a wound of the right arm above the elbow. Dissection showed the ulnar nerve connected by a fibrous band about three-fourths of an inch in length, and the divided ends of the median nerve could not be approximated nearer than two and one-half inches. There was complete loss of power in the hand, and only very limited power of flexion and extension of the hand at the wrist. Measurement showed the forearm to be two-thirds of an inch smaller than its mate. The sciatic nerves of a freshly killed rabbit were grafted between the separated ends of the ulnar nerve, and the spinal cord was used to connect the median. Healing occurred by first intention, and there was absence of fever or pain. Sensation returned in ten days to the thumb and forefinger, and from this time sensation and muscular development gradually improved. In four and one-half months patient could pick up small objects. Six years after the forearm was only one-eight of an inch smaller than its mate, and in the hand all the muscles were as well developed as in the other, except the abductor of the thumb, which was still weak. Dr. Robson concludes his reports by the following remarks:

"It is thus seen that though the recovery has been tardy, it was complete in almost every respect, the only exception being that of the abductor pollicis, which for some unexplained reason did not recover its function. The case is very encouraging, since it clearly demonstrates the possibility of restoring continuity of nerves by grafting. Whether the spinal cord in this case took up the functions of a nerve, or whether it simply served as a basis on which the nerve tissue was built up, I am quite unable to say. But that it did answer its purpose is clearly shown in the case. Why restoration of function in the ulnar nerve should have been longer than in the median, I am unable to say, as the ends of the nerve were not separated more than three-fourths of an inch, whereas the ends of the median nerve were between two and three inches apart. Could it be that the spinal cord offered a better medium for establishing continuity?

"I feel sure that we have still much to learn concerning the repair of nerve lesions, and I am not at all certain that the conclusion of physiologists is correct when they affirm that the peripheral portion of a divided nerve always undergoes atrophy."

Rupture of the Quadriceps Extensor Muscle and Its Tendon Above and Below the Patella.

Dr. Walker, in an analysis of two hundred and fifty-five cases of rupture of the quadriceps extensor, muscle, notes the following conclusions: 1. In recent cases, in which there is not much effusion and the joint is apparently not closed, in which the separated ends can be approximated and retained by suitably adjusted pads, the mechanical treatment may be carefully considered. In the hands of the intelligent general practitioner, this method may be expected to bring about a complete recovery in the larger number of cases. From nine to twelve months will be required to reestablish fully the normal functions. 2. A too prolonged fixation in bed is unfavorable to an early recovery; therefore early massage and passive motion are strongly advised. 3. The skilled aseptic surgeon who primarily resorts to the operative method in suitable cases (but the age and vitality of each patient must be most carefully considered) may quite reasonably hope to obtain a better result in a larger number of cases and save his patient three to six months' time. 4. Catgut, kangaroo tendon, or silkworm gut should be used, and when there is much effusion drainage should also be employed. 5. When the separation is greater than one and one-half inches, or when the case has not recovered under the mechanical treatment, the operative is indicated. 6. As the length of time required for treatment is a very important consideration, so the operative method, which has diminished this period and also succeeded in a larger number of cases without increasing the danger, will be more often indicated and more frequently applied in the hands of the skilled surgeon.—Medical Record.

Miscellany.

Large Fees.

Patients and their friends so often complain and find fault with the fees of their physician, usually when convalescence is complete, that it is a great relief to see the value for medical services named by the would-be patient.

An eccentric millionaire has offered a fee of one million dollars to the person who will restore his lost sight. He has atrophy of the optic nerve and it is likely that this fee will never be earned, but it only shows what value a man with the necessary money puts on his sight. The question will doubtless be raised whether this fee would be paid should sight be restored. Such fees should be collected while gratitude is fresh and the memory is green.

A man will grudge a paltry five hundred dollars to the surgeon who by skill and care saves his limb, but let this man lose that same limb later in a railroad accident and notice if he sues the company for only five hundred dollars. He sues the company for what his lost member is actually worth to him and he has forgotten what his faithful attendant did for him.

Medical service for the deserving poor cannot be too small and for the deserving rich cannot be too large. No medical man should spring a large price on a wealthy man just because he is wealthy, when he has charged one less well off a smaller fee for the same work, but in operative work the sum to be charged should be named and then if objections are offered the patient able to pay large sums should be given a chance to seek out one who will work for less money.

If a surgeon is known to make high charges and the patients visit him and demand service without asking what the cost will be, no complaint should be made if it is high. No physician is obliged by law to render service if he does not choose to do so and where there is other medical talent at hand there is no cruelty or neglect.

The question of charging clergymen comes up again and again. Many of them pay nothing for medical services and seem to take it for granted that no fee will be asked. Because a man is a clergyman receiving a large salary and with small expenses, is there any reason why he should get free services from a young physician who is struggling to succeed? There is only one answer to this question. The clergyman should at least offer to pay and if the medical man prefers to make no charge or thinks it is policiy to put the clergyman under obligations to him, then the clergyman cannot be blamed.

On top of all this false sentiment about physicians doing so much good and giving free services to clergymen, comes the statement that Louisville has imposed an income tax on physicians ranging from ten to one hundred dollars, according to the income received.

This, of course, will be fought, for class legislation should never be allowed. The laborer is worthy of his hire and the sooner that such false ideas of giving something for nothing are brushed away, the sooner will the public begin to understand that because a class of men and women, too, follow a profession because they love it, there is no reason why their services should be given free or at a greatly reduced price when the ability to pay a full price is evident.—Maryland Medical Journal.

Some Interesting Variations in the Flexor and Extensor Muscles of the Forearm.

Edward Judson Wynkoop, M. D., Demonstrator of Anatomy, College of Medicine, Syracuse University, writing to the New York Medical Record, says:

The following condition was noted in the flexor and extensor tendons and muscles in a male subject: The most interesting variation was the peculiar division of the flexor sublimis digitorum. The flexor sublimis digitorum arises as practically four distinct muscles or heads. The outer head or muscle arises by two heads, one from the oblique line of the radius above the insertion of the pronator radii teres, the other from the common tendon from the inner condyle of the humerus. These heads unite and become tendinous, and the tendon passes to its insertion in the second phalanx, dividing before its insertion to allow the tendon of the flexor profundus to pass through it on its way to the last phalanx. Just where these two muscular heads unite, a strong tendon is given off and passes to and blends with the flexor longus pollicis.

The next muscle or second head, from without inward, at its origin resembles more in its common characteristics the flexor sublimis digitorum. It arises from the common tendon and the internal lateral ligament of the elbow joint, soon becomes tendinous, and when about half way down the forearm widens out into a muscular belly, which is about two inches in length. The muscle becomes tendinous again and passes to its insertion in the index finger. From the small muscular belly above referred to, a tendon arises which passes to its insertion in the little finger. The third or most internal head or muscle arises from the common tendon and passes down the forearm to its insertion as an entirely separate muscle. The insertion of this muscle is in the ring finger.

The relation of the tendons passing under the annular ligament of the wrist joint is as follows: The tendons passing to the index

and middle fingers are anterior; those passing to the ring and little finger are posterior.

The flexor profundus digitorum is normal except that it becomes tendinous very high up in the forearm.

The extensor minimi digiti is wanting. The extensor ossis metacarpi pollicis has an additional tendon which arises from the anterior and outer border of the radius.

In the foot an extra tendon was given off from the extensor proprius pollicis and was inserted into the first phalanx of the great toe.

In looking over the records I can find no account of a similar condition. To Mr. Gere, a student, I am indebted for the excellent dissection.

In Memoriam.

DR. J. B. MURDOCK.

They've shrouded him! They've buried him!
The dirge no longer sounds;
The quickstep of the soldier's heard,
Returned, too, from the grounds.

They've buried him, the soldier's friend,
In days of bitter strife,
When sons of North and South arrayed,
Fought for their nation's life.

They've buried him, whose radiant face,
When peace had spread her wings,
Was messenger to gladden homes;
So hope his presence brings.

They've buried him, a noble son
Of Scotia's famèd soil,
Physician born of kingly mien,
High bred, in humble toil.

They've buried him, who bore the yoke
His followers must bear,
If like him they would earn the crown
Christ promised they should wear.

GEORGE ROSS, M. D.
Associate Medical Director 3d Corps, A. N. V., C. S. A.
Richmond, Va., Nov. 5, 1896.

Fortunes of British Physicians.

The Practitioner records the following amounts devised by doctors in England who have died during the year 1896: Dr. Patrick Fraser, $2,100,000; Sir John Erichsen, $450,000; Sir George Humphry, $400,000; Dr. Samuel Holdsworth, $265,000; Dr. William Statten, $200,000; Dr. George Harley and Sir William Moore each $125,000; Sir George Johnson and Sir Russell Reynolds each about $60,000. The comment is made by the same authority that these fortunes were not made so much by the accumulation of fees as by judicious investments.

The Physician as Citizen.

That an unreasoning prejudice—and all prejudices are unreasoning—exists against the participation by physicians in political and sociologic agitations is an undeniable fact. We do not now refer to the scheming and office-seeking of place-hunters with medical degrees, but to that legitimate coöperation with one's fellow-citizens in behalf of social or economic measures believed to be of benefit to the community, which, according to the prejudice spoken of, is to be forbidden to physicians only, of all classes of the community.

Of course there have been notable exceptions. Doctor Joseph Warren, who fell at Bunker Hill while in command as General of the Massachusetts troops, and Doctor Benjamin Rush, no less eminent in the Continental Congress than in his lecture room at the University of Pennsylvania, occur to everyone. But what may be forgiven to the dead, or to men of genius, is denied to the living, or to those whose less commanding position and abilities render them more amenable to discipline by popular censure. Nor is the laity alone responsible for this feeling; many physicians share it, and look askance upon any colleague whose public spirit leads him into opposition to the powers and wrongs that be.

In this state of public and professional opinion, what is the duty of the individual physician? Shall he yield to public sentiment, which punishes its violation by curtailment of practice and income, or shall he pursue the even tenor of his way, fulfilling his duties as man and as physician to the best of his ability? It is a difficult question to decide.

There is no doubt that medicine requires not only close and constant devotion to study, but that the physician shall be within ready call of those to whom he has undertaken to minister. It is quite evident, therefore, that close and continuous devotion and engrossment in public matters, and the undertaking of a large share of the direction of political movements is incompatible with the active practice of the profession. So much being granted, however, it is also quite evident that a physician may, without detriment to his professional studies, and without neglect of his patients, give a portion of his time and thought and action to the public welfare; how much and how applied, circumstances and individual discretion must determine.

As the physician's habits of research, his en-

deavors to trace the causes and study the mechanisms of the disorders of the human frame, peculiarly fit him to trace the causes and study the mechanisms of the disorders of the social organism; and as his experience in combating disease of the human body fits him to pass upon the wisdom of measures proposed to prevent or relieve social distress, his active and interested participation in public affairs should be welcomed by all classes.

We firmly believe that if the measures from time to time proposed in the various legislative bodies could be referred to committees of physicians, to investigate in a scientific manner, without partisan prejudice or self-seeking ambition to influence their decision, the volume of legislation would be diminished nine-tenths, to the great relief of the suffering body politic.

But to return to the question of how that physician should act whose interest in the welfare of his fellow men leads him to desire to do his share toward bettering the social environment, yet who knows that the penalty of running counter to the prejudice of the community is loss of a part of his income; it will depend upon which consideration is, or must be, the weightiest. If he need not depend on professional earnings there is no obstacle to his doing as he prefers. In the other case, his first duty is to earn a livelihood for himself and his family; this being provided, his own character will decide how far he is willing to forego ease and comfort and position, for the sake of doing what he considers it his duty to do for his compatriots or for mankind at large.

What should be the attitude of the profession toward physicians who strive to perform their civic duties is easier determined; it ought to be one of encouragement, sympathy and active support, professionally and personally. That it is not such is a matter of everyday observation—and of reproach.—Philadelphia Polyclinic.

An Unusual Case of Lockjaw.

Sachse reported in the Centralbl. f. Chir., No. 40, 1896, an unusual case of lockjaw, occurring without known cause in a male, aged 24 years. On waking one morning he found he could not open his mouth as far as usual. The disability increased daily, until he was unable to separate his teeth. For four years he was treated without benefit, until it was discovered that the right upper wisdom tooth pointed directly outward, and so pressed against the internal pterygoid muscle as to prevent the jaw from opening. It was removed with difficulty. Immediately after its extraction the jaw could be partially opened, and in eight weeks function was fully restored.

BOOKS AND PAMPHLETS RECEIVED.

"Surgical Clinic at St. Mary's Hospital, September 23, 1896," by H. O. Walker, M. D. Reprinted from The Leucocyte, December, 1896.

"Anterior Soft Hypertrophies of the Nasal Septum," by Edwin Pynchon, M. D. Reprinted from The Larynoscope, November, 1896.

"Reviews of Some Points of Surgical Interest in Abdominal Cases," by Edmund J. A. Rogers, M. D. Reprinted from the Colorado State Medical Society, June, 1896.

"A Review of Some Interseting Points in Surgery Observed During the Six Months Ending June 1, 1895," by Edmund J. A. Rogers, M. D. Reprinted from the Colorado State Medical Society, June, 1895.

"Iniencephalus," by Henry F. Lewis, M. D. Reprinted from the American Journal of Obstetrics, Vol. xxxv, No. 1, 1897.

"Sprays and Inhalents," by Seth Scott Bishop, M. D., LL. D. Reprinted from the Medical Standard, February, 1897.

"The Mineral Waters of Mt. Clemens, Mich.," by Richard Leuschner, M. D.

"Treatment of Stricture, Granulated Urethritis and Prostatitis by Electricity and Allied Remedies," by G. W. Overall, M. D. Reprinted from the Medical Mirror, St. Louis, Mo., 1896.

"Anæsthesia of the Trunk in Locomotor Ataxia," by Hugh T. Patrick, M. D. Reprinted from the New York Medical Journal for February 6, 1897.

"Improved Hypodermic Svringe and Remedy Case," by Elmer Lee, M. D. Reprinted from the Journal of the American Medical Association, March 28, 1896.

"Two Years' Clinical Experience with the Gold Solutions," by Eustathus Chancellor, M. D.

"The Treatment of Carcinoma Mammæ," by Carl Beck, M. D. Reprinted from the Clinical Record, October, 1896.

"Pyothorax," by Carl Beck, M. D. Reprinted from the International Medical Magazine, January, 1897.

"Sonderabdruck aus dem Archiv fur klinische Chirurgie," by Carl Beck, M. D.

"A New Contrivance for Intestinal End-to-End Anastomosis," by J. Frank, M. D. Reprinted from the Medical Record, October 3, 1896.

"Genito-Urinary Surgery and Venereal Diseases," by J. William White, M. D., and Edward Martin, M. D. Philadelphia: J. B. Lippincott Company, 1897.

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THE STUDY OF SYNTHETIC METABOLISM IN THE HEALING OF GRANULATING WOUNDS.

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Chief Surgeon Missouri Pacific Railway Company.

It is an accepted belief that immediate union of wound surfaces never occurs at any part of any tissue of the body; that all wounds heal by the interposition between the severed parts of granulation tissue. If the wounded surfaces are kept in apposition and remain in an aseptic condition, healing by first intention occurs in a very short time, and with the production of the least quantity of embryonic tissue. It can be stated as a general truth that in wounds where we have varying large loss of tissue and the attendant inability to place them in favorable apposition, such wounded surfaces must heal by the production of large quantities of granulation tissue. Hence healing by both first intention and by granulation is essentially by the same process, with only this difference, that in healing by first intention, favorable conditions accomplish the result by the formation of a small quantity of the reparative material, and the non-interference of adverse elements and conditions, while in healing by granulation unfavorable conditions debar the economical use of healing elements; hence greater length of time is required and furnishes greater elements of infection, and healing of wounds by granulation is the repeated history of wound infection and of varying degrees depending likewise upon varying adverse conditions, such as extent of injury, loss of tissue, the lowering of the normal standard of cell resistance, along with repeated opportunities of septic contamination. Granulation tissue cells are formed by both direct and indirect cell division; this, of course, only in their embryonic state. Senn says, "The bulk of all granulation tissue is derived from the connective tissue, as this mesoblastic structure is diffused throughout the entire body, and with the exception of the nervous system is found in almost every organ." Ziegler, Thiersch and Recklinghausen have shown that formative granulation cells are not direct descendants from emigrated leucocytes, but that the original fixed connective tissue cells are among the essential factors in wound healing. Connective tissue cells always give birth to new connective tissue cells, epithelial cells give rise to new epithelial cells. A connective tissue cell is never formed from an epithelial cell. In other words, fixed tissue cells always come from fixed tissues and have no tendency toward reversal or other forms of cells. These fixed tissue cells, both connective and the endothelial of the vessels, are the real factors in the formation of the cicatrix. Tillman claims that the leucocytes which are present are either absorbed or perish, or they wander back into the circulation as in inflammation. He says, "On the other hand, I believe that some of the protoplasm of the wandering cells is employed as cell material in both the scar formation and the regenerated processes carried on in the original fixed tissue cells in the neighborhood. I am unable to say whether the white blood corpuscles can themselves form fibrillar connective tissue when the circulation is sufficiently active, for example, in a granulating wound of granulations, but their importance in this respect is much less than that of the fixed tissue cells, i. e., the cells of the connective tissue and the endothelium of the vessels, which have been demonstrated to be the real producers of the scar and are called fibroblasts. Reinke and others believe that further development is possible in those wandering cells, which make their appearance after the proliferation of the fixed cells has begun,

and which exhibit great vital energy. Ribbert considers it probable that the lymphogenic-leucocytes with single nuclei are capable of taking part in the construction of new connective tissue, by helping to cover over the lymph cavities and space with endothelium. So then the cicatrix of a wound is formed of fibrillar connective tissue, which is formed from fibroblasts." Tillman still further states that "the formative cells are at first round and then enlarged and look like large round epithelium cells, or they are more elongated or possess one or more processes, some becoming spindle-shaped, others club-shaped, or they may form branch cells or polynuclear giant cells. The processes repeatedly anastomose with each other. The number of large formative cells then rapidly increase, and in certain localities they lie close together. The fibrillar tissue is formed in part directly from the protoplasm of the formative cells themselves, and is consequently intracellular in its origin, or it comes from a homogeneous intercellular ground substance or stroma, which has previously developed from the formative cells. In the intracellular fiber formation, fibers make their appearance on one or both sides of a cell, or at one extremity, or in a process of it, and unite with the fibers of the adjoining cells. The nucleus, together with a portion of the protoplasm of the formative cell, persist as a fixed connective tissue cell. The direction taken by the fibers is usually the same over a considerable area, the formative cells playing no part in determining the direction of the fibers. The size of these remaining cellules subsequently diminishes, the fibrous tissue becomes thicker and the cicatrix is complete." Again, it is asserted that in the first stages in the repair of a wound the fixed tissue cells receive their nutriment from the blood plasma, from the vessels in the immediate vicinity, but this supply in cell nutrition is only temporary, the formation of new blood vessels being necessary to further growth and repair. The repair of wounds comes then mainly and essentially from mesoblastic elements; original fixed connective tissue cells and endothelium of vessels are the source and elements creating and hastening repair in wounds. Any element which is competent to hasten the granulation of wounds must be based upon the principles of aseptic wound treatment and the application of mesoblastic elements to granulating surfaces. This is true, not only as regards the process of Reverdin, Thiersch, Wölflers, mucous transplantation, the root sheath of hair, but in the direct transplantation of skin itself. Experience has taught the surgeon that in healing by second intention or granulation, particularly in those wounds where we have contused and lacerated tissue, modern methods are defective, even unto the most careful use of aseptic or antiseptic wound treatment; that where it is not possible to obtain approximation of the surfaces through extent of injury, situation or loss of substance, such wounds are subject to infection and the formation of pus is a frequent attendant. The utter inutility of attempting to destroy pus foci when once resident in the interior of tissue and vessels by applying antiseptics to the surface has been demonstrated by Schimmelbusch and others. These microbic forms are endowed with life and procreative power and fulfill their function under the favorable conditions in which they are placed. Microbes may be destroyed upon the surface of a wound by antiseptics, but those chiefly protected and in fertile soils thrive constantly beneath antisepticized surfaces. We may lessen the number of pathogenic microbes in their less favorable situations, but we certainly do not and cannot decrease the vigor of them in localities favorable to them. Again, the best and most perfect antiseptics are disease producers themselves, begetting local and systemic effects. We are all well aware of the poisonous effects of corrosive sublimate, iodoform and carbolic acid. These so-called cures are at times dangerous disease producers and therapeutic fallacies. If pain be nature's signal of distress and ease is but rest, and rest is indication of normal function, it appears but a just conclusion that the non-irritants as exemplified in the application of asepsis, should be justly considered as nature's ideal form of cure. Antiseptics are all irritants, and the use of irritants, we maintain, are within the realm of danger, as their management depends upon the interpretation of divers conditions, which of necessity are not always evenly determined. Pain is but a nerve's distress and its waste and the loss of just so much vital force; hence in the application of asepsis this waste, dis-

tress and loss of force is averted; but it is ultimately always engendered in the application of antiseptics. The great worth of asepsis is in its honest simplicity, while the danger of antisepsis comes from its natal error and the assumption of experimental truth. The value of asepsis has been established by truthful investigation and delay, while antisepsis has prospered by unwise, misleading precipitancy. Absolute cleanliness or effective studied prevention is but asepsis; irritant and disease-producing uncertainties picture antisepsis. It is but natural to believe that with the accumulation of time, experience and results, all wound treatment will be based upon the principle of asepsis. The virtue which seems manifest in antisepsis plainly comes from those elements of asepsis contained in the technique of antisepsis. The great and real value of all wound treatment comes in the true realm of prevention. Asepsis is but a name for ideal prevention, ideal rest, as it prevents infection and unrest, and these are the real germs of cure. Zeidler of St. Petersburg has for the past seven years doubted the sense or desirability of attempting to disinfect wounds which are suppurating, or localized foci, or diffuse suppurative cellulitis. He has practiced in such wound condition or diseased condition asepsis in preference to antisepsis. In 1889 he recorded about one hundred cases treated without antisepsis in the most satisfactory manner, and his observations have now swelled up to many hundreds. His method of treatment is as follows: The field of operation is prepared as usual; the wound is thoroughly opened up and all tissues infiltrated with pus carefully dissected out. It is then wiped out with sterilized gauze, and if necessary irrigated with a 6 per cent saline solution. It is lightly but carefully packed with sterilized gauze, over which is placed another layer of gauze covered by wool and firmly bandaged on. Zeidler is greatly in favor of dry rather than wet dressings, believing that thereby secretion is diminished and the formation of healthy granulations assisted. Neither iodoform nor any of the usual antiseptic reagents appear to his mind to have any salutary influence on the course of the case, and indeed he considers that they are really harmful. The dressing is often left on for eight days without being changed and he has never noticed any objectionable smell arising from decomposition of the secretion. Should the effusion be great and soak through the outer layers, these may be removed and replaced without touching the deeper parts.

It can be safely said that the most progressive surgeons of the day use asepsis almost to the entire exclusion of antisepsis. Success in connection with operative treatment and wound treatment depends upon studious, well directed attention and care in the preparation of a patient, the cleanliness of the operative surroundings of the surgeon and assistants, and the proper aseptic preparation of every element used in dressing entering into the treatment of the case. It has been said that asepsis is the scientific form of wound treatment, while antisepsis is an empirical form. We have found after some experience that with the normal saline solution—a 6/10 or 7/10 per cent solution—and proper sterilized substances, that we obtain better and more comfortable results than was obtained by antiseptics. In our earliest experience with antiseptic wound treatment the following technique was pursued: As is well known, particularly in railway surgery, more than ordinary septic conditions are engendered. Not infrequently at the time of injury the parts are bedraggled in cinders, dirt and doubtful filth and not infrequently are covered with grumous oils. Under these conditions the parts were thoroughly scrubbed and cleaned, shredded and doubtful tissues are removed; then the parts were irrigated with a corrosive sublimate solution, ranging from one in one thousand to one in fifteen hundred; then the surface was covered with iodoform, then iodoform gauze; then above this corrosive sublimate gauze covered the wound; then absorbent cotton applied; then above this a mackintosh and more gauze and a spica bandage.

0.6-0.7 %

In amputation additional elements were applied in the shape of a plaster-of-Paris bandage covering the outer dressing. We not infrequently found that we obtained the best results where rigid filtration of air was thus accomplished, but once when pus manifested itself, our irritant irrigations seemed incompetent to hasten result. It is true that by this means we have always avoided septicæmia and pyæmia, but still infection remained. We have tried both asepsis and antisepsis in

granulating wound treatment, and while heartily in favor of aseptic wound treatment, still we find that in injuries inflicted on the railways we have many halting stages, particularly in large granulating wound surface. Anyone who has tried antiseptic and aseptic dressings will soon find out that there is a period in the healing of granulating surfaces in which there is a positive non-effect of any application on the granulation. They not only become tolerant, but show a tendency toward retrogression; that is, they apparently become rebellious to the continuous application of any single agent or dressing used. This is certainly true regarding the normal saline solution, corrosive sublimate, iodoform, carbolic acid, etc. But there is this in favor of the saline solution and aseptic dressings: their continued application does never engender systemic effects and we obtain more satisfactory curative results. Again, we believe that when the necessity arises for the repeated erasement of the granulations, there is greater loss of tissue, and the resulting cicatrix is even more unstable than when saline solution is used. Hence, we believe that skin grafting in some form should be used more or less in many large granulating wounds, as it lessens the time incurred in the healing process and in preventing consequent cicatricial contraction. Yet experience has taught us that skin grafting is at times an unstable form of cicatrization. It has been demonstrated beyond a doubt that the Thiersch method is pre-eminently the superior form of skin grafting, as the Reverdin method is imperfect, while in the Thiersch method conditions are intelligently interpreted and met. Of course, skin transplantation presents elements far superior to any process of skin grafting, but the many elements of difficulty in its application debar the possibility of broad and extended use. Again, in the treatment of granulating wounds the use of the normal saline solution does not debar us from using these elements of skin grafting which hasten cicatrization. We have succeeded in many instances of obtaining grafts, by placing the graft direct upon the granulations without scraping away the granulations. Schwenninger and Nussbaum have attempted to implant hair by strewing it over a granulated area, where there has been a loss of skin. If the root sheath still remain attached to the hair, it became adherent and formed a center from which cicatrization proceeded, but the hair itself fell out after a few days. Hairs without their root sheath did not become attached at all. (Tillmann's.)

So in the healing of granulating wounds, we have acted upon this suggestion as stated by Tillmann and found that by the implantation of single hairs we could readily hasten cicatrization, but that a hair without a root-sheath was of no use. We have succeeded with hair implantation, and there is always an abundance of hair around, their preparation and application is readily and easily accomplished without all the attending elements of worry and care necessitated in the preparation of skin grafts. Hair from the head is always used. It being pulled forcibly and rapidly out, those possessing the root-sheath are put into a 7-10 per cent saline solution at a temperature of 140 degrees F. After they have been sterilized they are then applied directly to the granulations. The root-sheath is pressed along with the attached hair rather firmly into granulations, and about one-third of an inch from the edge of the cicatrizing wound. These are held in position by the application of sterilized gold or tin foil and hot salted gauze applied direct to granulation, and over foil holding root-sheath grafts. At about the eighth or ninth day the foil is removed; the hair is permitted to remain until it comes away. We generally find at this period a pearly pellicle tissue, which indicates the adhesion of the graft. We do not see why this should not be done in almost every granulating wound. We have found the saline solution thoroughly soothing and not infrequently where a corrosive sublimate solution has produced more or less pain, that a change to the saline solution was followed by undoubted ease and rest. The only objection which we have found regarding the saline solutions thus far has been the necessity of applying them oftener than when we were in the habit of applying antiseptic dressings, and this tendency toward non-action or toleration by the granulations, which we attributed to septic infection. Hence we have conceived that if we could by any means sterilize or filter the surrounding air, we would be enabled to accomplish more successful results. We have already stated that in our early application of antiseptics we not infrequently

had healing by first intention, and this we interpreted had arisen by obtaining a rigid exclusion of contaminated air. There is no doubt but that all wounds, particularly granulating wounds, require in their healing process the presence of pure sterilized air; likewise there is no doubt that too much heat retented by dressings is hurtful. While we realize that the generally accepted idea is that absorbent sterilized cotton is a perfect germ filtrant, still at the same time we believe that it is a great heat producing and heat retaining agent. Hence, if we can obtain dressings which will admit sterilized air to the wounds and which will absorb any excess of the exudations and still not retain or impart heat to the treated parts, we may be able to obtain a more perfect process of healing. While we realize that in many instances we cannot completely get rid of wound infection, yet we believe that along with the aid of the process of phagocytosis and the prevention of continual external infection that the best of results will accrue. In the treatment of contused and lacerated wounds, where nature has to heal by granulation, our failures have been constant and unceasing, and it has occurred to us that the great desideratum in the treatment of wounds is the perfect filtration of external air, the non-retention and production of as little heat as possible engendered by dressings and by the absorption of exuded materials accomplished by drainage and absorption. We have at our command some of the best forms of antiseptics, which owing to their irritant character we are unable to use, either upon the granulating surface or the cutaneous surface. We have recently used the mild and unirritating elements of asepsis in the shape of warm sterilized salt solutions, aseptic salted gauze bandages, and in addition thereto crinoline gauze of No. 7 make, steeped in a strong antiseptic mixture, for the purpose of filtrating the air and preventing any ingress of microbes. Crinoline gauze has large meshes, which permit the entrance of air. This gauze is treated in the following manner, with the aim of filtering the air prior to its coming in contact with the wound: One-fourth of an ounce of the best calf's foot gelatine is boiled in a pint of water for half an hour or more, and to this thoroughly boiled gelatine there is added a quarter of a drachm to the ounce of this gelatine mixture, of either the oil of cassia or the oil of mustard. A bandage of crinoline gauze of such width as desired is thoroughly steeped in this mixture of gelatine and one of these essential oils, and if desired can be put on in their hot condition, or they can be thoroughly dried in a sterilizer and when needed for use can be steeped in hot sterilized water and thus readily softened for application.

The manner of application consists of the following technique: The wound is thoroughly cleansed, all doubtful and shredded tissues removed, the surface around the wound treated by permanganate of potash solution or oxalic acid, and then irrigation is applied to the surface, generally 6-10 or 7-10 per cent saline solution at about 140 degrees F.; the surface is then dried; then gauze steeped in hot sterilized salt solution is applied direct to the wound, three or four layers being used to thoroughly protect the wound; then a single bandage of this sterilized gelatine bandage is applied on the salted gauze; then more salted gauze is applied above this, and another layer of the gelatine gauze is then applied, to be covered up by a sterilized spica bandage.

DISCUSSION ON DR. OUTTEN'S PAPER.

Dr. Emory Lanphear: I feel that I cannot allow the assertions of Dr. Outten go by, without challenging them in certain respects, at least. I believe in this audience there are too many careful observers and thorough surgeons, who have seen too many cases recover under strict antiseptic surgery, that would have terminated fatally under the method advised by Dr. Outten, to disbelieve in antiseptic surgery. In the first place, he makes the statement that the insertion of the hand into the hair, and then putting the hair into a solution of common salt—seven-tenths per cent—at 140 degrees F., will sterilize the hair which is taken from the septic head. This is absolutely absurd from the standpoint of the bacteriologist. I put water at 140 degrees into my wounds purposely to check hemorrhage—do I sterilize my hands in 140 degrees of common salt? By no means. The hairs after being put in that solution of common salt are just full of disease-producing bacteria.

The second point to which I would take ex-

ception, is the assertion based upon Dr. Roswell Park's experiments with mustard. It is true that mustard and the oil of mustard may be regarded as one of the most valuable of disinfectants. As Dr. Outten says, after you have been holding a post-mortem—yea, more, after you have been handling iodoform—if you will take simply some mustard meal and thoroughly rub your hands with it, the foul smell disappears. But, howsoever thoroughly you might wash your hands in mustard meal, as advised by Park, if you will immediately take a needle and insert it beneath the finger-nails, or even rub the surface of the finger upon a proper culture field, you will find that the finger is still dirty beneath the nail and on the skin you will find dirt which is pregnant with danger to the patient—dirt which contains the staphylococcus or the streptococcus of pus, and Park himself is said to have admitted quite recently that he does not now recommend this process of sterilizing the hands by disinfectants. It certainly does not disinfect, as has been proven by abundant experimentation in the last two months.

Dr. Outten seems to imply in his remarks that granulation tissue is always infected tissue. I want to say in reply that I can take you through the hospitals of this city to-day, and show you wounds made two or three weeks ago, that are granulating without the least sign of inflammatory trouble, pus, or infection, as a result not of asepsis, but of the most careful antiseptic treatment possible.

We have been told that iodoform is an antiseptic or a germicide. It is nothing of the kind. No intelligent man nowadays will claim that iodoform is germicidal. It is scarcely antiseptic. Powdered chalk would do almost as well. It is simply by the drying process that we get beneficial results from iodoform and not from its smell or its tendency to destroy germs, but from the fact that it prevents proliferation of the germs that are there and the development of new ones. In that one point lies the great secret of success in the use of iodoform. Any dry powder of equally absorptive power would probably be as good as iodoform.

Dr. P. Daugherty: A good many years ago —some ten years at least—I think the late Professor Gunn said that he did not know whether there was anything in antiseptics or not, but one thing he did know, and that was that since he commenced the use of carbolic acid he had much better success with his wounds than he did before. Now, gentlemen, I do not know whether there is anything in iodoform or not, but I must say that since I began its use I have had better success than I did before, and I believe it was from Dr. Outten that I got the idea of using it, and using it plentifully. Some years ago when the M. K. & T. was under the control of the Missouri Pacific, I happened to be on a visit in St. Louis, and, of course, went to the hospital. Dr. Outten had a man with a gun-shot wound in the gluteal region, upon whom he was operating that day. He made quite an extensive exploration, but failed to find the bullet, and in dressing the wound he kept putting in his iodoform continuously, and said to me, "I use it very freely," and I got the idea of using it from him. Since then I have had better success than before. But there is another thing of which I feel firmly convinced, that antisepsis is fast giving way to asepsis, and the time is coming when cleanliness will supersede antiseptics.

Dr. Broughton: In the past two years I have discarded what we call antiseptics. I used to employ them, and I believe that while it is not universal, the majority of surgeons are now discarding antisepsis and adopting asepsis. I am not personally acquainted with Dr. Outten, but I believe he is a man who will learn by experience, and he has learned that iodoform is of no good.

Dr. W. S. Hoy: The question of antisepsis and asepsis is one in which the profession are particularly interested at this time, and sooner or later we will have to draw a marked distinction between the one and the other; either discarding one or accepting the other. We have witnessed from time to time the gradual growth of certain materials that were offered to the profession as kind of hobbies, not only from manufacturers, but physicians themselves. While I love Dr. Outten as dearly as my own father and respect him for his ability and characteristics as a man, I think sometimes he takes opposite views in this association in order to get the members fighting. I would just as soon dust a wound with dry clay and expect good results from it as to use iodoform.

As regards the treatment of wounds asepti-

cally, I believe that the time is not far distant when the medical practitioners of this country will give greater weight and thought and consideration to asepsis than to that of antisepsis. It is only a question of a short time.

Dr. Summers: I wish to state in a word or two that aside from antisepsis and asepsis, the central idea or keynote of the whole thing lies in leucocytosis, and as one gentleman very tersely added, phagocytosis.

Dr. H. H. Mudd: For two years, practically, I have not used iodoform. I have not used any of the medicated gauzes, and I use only pure solutions of water, sometimes salt solution, but mostly distilled water, about wounds. I have had more satisfaction in the last two years' work than I have ever had under other plans of antisepsis. I do not wish to discourage the latter, because I think it has a purpose. Its greatest purpose with me is in making myself clean, in making my hands and the surface upon which I work clean, as well as wounds and the patients themselves clean. It does not help in the healing of wounds.

I should like to add a strong word of caution against the use of iodoform. I used it freely for a number of years. I used it also in the abdominal cavity on the peritoneal surfaces, and I found that I caused trouble not infrequently with my patient from what I supposed to be shock from the operation. I am happy to say that a large number of those cases of shock, that I had supposed to be such, have disappeared under the use of simple sterilized gauze. There is another point connected with iodoform dressings within the peritoneal cavity, and that is this: By its absorption you not infrequently obtain or bring about a disturbed action of the kidney, and I believe this disturbed action of the kidney follows the use of iodoform. It is a dangerous agent to use in the abdominal cavity. It is a comparatively easy matter to sterilize your dressings; it requires a little preparation, you are more thorough and more certain of your bandages, if you make the sterilization yourselves.

Dr. E. R. Lewis: I want to make a remark about hair bulbs. I caught the idea from Dr. Outten. In an extensive nephrectomy case the wound was a long time in granulating, and I removed a hair from the head of the patient, three-quarters of an inch in length, then dropping it onto the granulating surface, without attempting sterilization, and got the desired result.

Dr. Lee, Omaha: In regard to iodoform, I would ask one question of those who do not believe in its antiseptic or germicidal effect. Our experience teaches us that sterilized iodoform oil injected into a tubercular joint, has the effect of destroying the tubercle bacilli, and if it destroys the tubercle bacilli, surely it is a germicide and acts as such when used externally.

Dr. Lane, Kansas: It does not necessarily follow that iodoform is a germicide because the bacillus of tuberculosis disappears from the knee joint when the iodoform is injected into it. It is probably settled that germs do not develop well in the presence of iodoform. It is not very irritating to granulation tissue. It should be sterilized before it is used. It is made to do too much work. It takes very little labor to employ antiseptics; it means much labor and much pains to use asepsis. I believe the physicians present would have little use for antiseptics if they were satisfied they had a condition of asepsis. The blood is an antiseptic agent. Germs inoculated on a mucous membrane will be destroyed by nature's process without antiseptics sooner than if they were used. I believe we are learning to find in nature an antiseptic; to find in the tissues of the body an antiseptic. We are extracting it from the horse and expect much from serum. I agree with Dr. Mudd that antiseptics are good for the physician and asepsis for the patient.

President Murphy: If there is any one thing for which the medical profession is noted, it is its unanimity, the way in which it agrees upon all things. There is not one dividing or opposing element in this discussion. You are one, but you are attacking this subject from different standpoints. Dr. Outten, who prepares his hand properly, who devotes time and attention to his garments, who has everything strictly clean surrounding his patients, does not need antiseptics. What for? Nothing to kill. He does not need his gun. That is the only difference. The other man who has not had the training in preparing his hands, who does not understand how to cleanse himself for an operation, needs his carbolic acid and his bichloride.

Again, as regards the hair, taking it and put-

ting it on a granulating wound. Why should you not put hair on a granulating wound? The granulating wound surface is protected by nature from infection, not as much as the skin, of course, but greatly protected, and unless you put something on the wound that will destroy the covering of these granulations, or unless you are so rough in your treatment of the wound as to lacerate the granulations, you can put on hair and it will not infect the wound. Granulations are a protection to it, except against certain microphytes. They afford no protection whatever against the streptococcus erysipelatosus. This germ destroys the granulations. They melt before it just like snow melts before the sun. I cannot let iodoform be abused in this way and sleep well. It is used in joints in the abdomen, and it is also misused in joints and misused in the abdomen. It is used properly and improperly upon the surfaces of wounds. There are undoubtedly present in this hall, gentlemen who remember the teaching of the late Professor Allen. Asked what he would do in a case of scarlet fever, he said, "Gentlemen, that depends upon what is the matter." It depends upon the condition of the wound whether you use iodoform or not. It depends upon the condition of the joint whether it is necessary to put iodoform in there or not. But if you put idodoform in, for the purpose of killing the microphyte, or strangling him, it has no such effect, but it has the effect of stimulating the reproductive power of the tissues of the part, and that overcomes the destructive effect of the microphytes. Will you use iodoform on the surface? Yes, in certain kinds of wounds you use it on the surface, but not in all. Will you use this or that application? That depends upon what is the matter. Now, gentlemen, we are a unit on this subject. One man has to treat a certain class of cases and gets good results by his method;

AMBULANCES, MO. PAC. RY. HOSPITAL AT ST. LOUIS.

THE CHIEF SURGEON, MO. PAC. RY., IN HIS OFFICE.

THE PHARMACY, MO. PAC. RAILWAY HOSPITAL AT ST. LOUIS.

another treats a different class of cases, and also obtains equally successful results by his plan, and the consequence is one thinks his method to be a good deal better than the other. You are accomplishing the same results in different ways. (Applause.)

THE MISSOURI PACIFIC HOSPITAL AT ST. LOUIS.

Dr. Outten: I do not want to weary you with extended remarks at this time. All I have to say is this, that it is useless for me to attempt to defend asepsis, because the triumphs of surgery for the last ten years have come entirely from this direction. While I used to think of Sir Joseph Lister as the ideal man, I likewise used to have a certain species of contempt for Lawson Tait. But I am free to confess that Sir Joseph was the era-maker, and I likewise know that Lawson Tait was the interpreter of what had come before, and his results far surpass those obtained on the lines enunciated by Sir Joseph Lister. I thank you for your discussion of my paper.

Members should begin at once and arrange for their transportation to Chicago for the convention in plenty of time.

THE MISSOURI PACIFIC HOSPITAL AT ST. LOUIS.

The Missouri Pacific Railway system, consisting of the Missouri Pacific Railway, with its leased and operated lines, has a total of 1,773 miles of track in operation in Missouri, Arkansas, Louisiana, Kansas, Nebraska and Colorado, and gives employment to about 18,000 men. With such a force it is not necessary to say that the road has use for a surgical system, and it has an admirable one. The chief surgeon* is Dr. W. B. Outten of St. Louis, to whose high executive skill has been due the efficiency of its hospital service since its inception. The road has a staff of eighty surgeons, under Dr. Outten, in various towns on its route, with hospitals in St. Louis, Kansas City and Little Rock. The hospital system was established in May, 1884, by the opening of the St. Louis hospital, with a bed capacity of 62 beds, which has been increased until it is now 130, and under pressure will accommodate 155. The St. Louis

WARD IN THE MISSOURI PACIFIC HOSPITAL.

*This article is published in the Railway Surgeon clandestinely and without having been read by the editor-in-chief.—Sub Ed.

hospital building is a large, well lighted and ventilated structure occupying an entire city block, between California avenue, Henrietta, Eads and Iowa streets, situated well in the city proper. Spacious and well kept grounds surround the buildings, on which are located the two detached wards, the boiler room and stable. These buildings were erected at a cost of about $75,000.

OPERATING ROOM OF THE MISSOURI PACIFIC HOSPITAL.

The hospital system was planned to have a series of central hospitals, where patients could be treated by specialists in preference to a system of cottage hospitals at various points on the road; thus bringing into use the highest technical skill, the best collection of instruments and the most recent methods of treatment and nursing at the least expense. The

GROUP OF RESIDENT STAFF, MISSOURI PACIFIC HOSPITAL.

St. Louis hospital, with its twelve wards, large and well lighted operating room, apartments for the staff and attendants, provides every desired facility for the care and comfort of the patients and resident staff. The staff consists of twelve members, viz., four resident internes and eight consultants, with an oculist, aurist, laryngologist, dermatologist, neurologist, bacteriologist and others. There are fourteen nurses, seven orderlies, a driver, engineer, gardener and night watchman. Two persons, a chief clerk and assistant, attend to the clerical matters, making a total of thirty-nine employed in the hospital. It has an ambulance service of two ambulances, whose monthly average is 132 cases. The hospital is equipped with all the instruments and appliances of modern surgical practice at a cost of $9,000, and a library for the use of the patients, consisting of 2,800 volumes.

This briefly describes the largest hospital in the world devoted to the treatment of the sick and injured employes of one railway. Some idea may be gained of the work done by a review of the figures given of the service rendered last year.

In 1896 the St. Louis hospital treated 2,108 surgical and 14,970 medical cases, making a total of 17,078 cases from all sources.

During the year there were 51,303 prescrip-

tions filled for in and out patients, and sent out on the road to such employes as made request.

During the year, 1,146 patients were treated by specialists; 5,168 visits were made to them, and 209 operations performed. An average of over 11,000 meals are supplied monthly.

A monthly report is issued, giving an exhibit under the following heads:

Patients on hand.
Patients admitted.
Number of deaths.
Total number treated during month.
Total number discharged during month.
Remaining in hospital.
Number of patients treated during month.
Daily average of patients.

A regular report is made of the dispensing department and reports of the laundry, meals, ambulance and administration. A table is given, showing the age, nativity and occupation of patients and a classified, tabulated statement giving, under special heads, the various diseases. These statistics are very complete. The chief surgeon has records covering 270,000 medical and 30,000 surgical cases. For the past five years the St. Louis hospital of the Missouri Pacific railway has treated an average of 15,000 cases annually, and it seems the limit has not yet been reached. It has demonstrated its usefulness in many directions. All kinds of cases are treated, except contagious diseases and those arising from immoral acts. The hospital service also cares for the health of the employes in a sanitary way. Rules are issued for their guidance, concerning their habits, vaccination and everything tending to prevent sickness.

In all ways the policy of the management is broad-gauge and liberal. No effort is made to economize in any matter wherein the welfare of a patient is concerned. The sole aim appears to be to give the best possible care to every individual case, and to have the entire system of the road so well in hand that everything and everybody work together to the best advantage.

There is little to be said in explanation of our illustrations, which are made from photographs taken especially for this article by a representative of The Railway Surgeon. To nearly all members of the National Association the figure of the surgeon-in-chief will be pleasingly familiar. There is no man in the country to whom railway surgery owes as much as it does to Dr. Outten.

F. S. D.

Fracture with Dislocation of Humerus Treated by Arthrotomy.

At a recent meeting of the New York Surgical Society Dr. W. T. Bull presented a patient, a boy, aged fifteen years, who was admitted to the New York Hospital, April 10, 1896, shortly after having been knocked down and striking on his right hand and elbow. The right shoulder was much swollen, the deltoid rigid, the arm, from acromion to left epicondyle, shorter by three-quarters of an inch than the other. There was a soft crepitus on rotation, and the head could be felt immovable in the axilla.

Forty-eight hours after admission, under ether, futile efforts were made by manipulation and direct pressure to replace the head. A longitudinal incision was made through the fibers of deltoid just internal to acromion, exposing the seat of fracture and capsule of the joint. The upper epiphysis, consisting of the head and two tuberosities, was separated from the shaft, but held in close contact by peritoneum and fascia. The head was fully in the axilla, and there was no displacement relative to the shaft. After division of the capsule the head was drilled, McBurney's hook inserted, and traction was made with pressure on the head. This failing to move the head, wider division of the capsule was made, and then the head was pried into place with a periosteal retractor.

The anterior or outer part of the wound was closed over an iodoform tampon which rested on the head of humerus, and a second one was placed in a counter opening posteriorly, also leading to within the capsule. Plaster-of-paris bandage. There was a moderate wound reaction, but no profuse suppuration. In two months the wounds were superficial and motion improving. In two and a half months all wounds were healed.

The splint was used for eight weeks. At the end of eight months (December 9, 1896) it is found that the boy has for practical purposes good use of the arm and hand. There is no shortening nor atrophy, though just below the acromion the fullness of the deltoid is less marked than on the other side. Moderate stiffness, while the head of the bone is clearly in place. Rotation possible to about one-half its normal extent. Abducton about three-quarters of the way to the right angle (horizontal position). The movements of the scapula complete a range of motion but a trifle short of that possible on the sound side. —Annals of Surgery.

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TRAUMATIC NEURASTHENIA AND HYSTERIA.

It is plain to the student of neurology that many of the views concerning neuroses following traumatism have not by any means been thoroughly elucidated. In a discussion upon this subject on February 11 last, at the New York Academy of Medicine, a paper was read by Dr. Philip Coombs Knapp of Boston, and discussed by such shining lights in the profession as Drs. Charles L. D. and Bernard Sachs, M. Allen Starr, Frederick Peterson, J. Arthur Booth and Pearce Bailey. The subject of the paper was "Traumatic Neurasthenia and Hysteria." Dr. Knapp, according to a report in the Medical Record, "limited his paper to two of the commoner and more definite types of nervous trouble of apparently functional nature following traumatism, but in considering only traumatic neurasthenia and hysteria he did not mean to imply that other neuroses could not have such an origin." The report continues:

The paper was based on an analysis of two hundred cases of traumatic neurasthenia and hysteria in the hospitals of Boston. Of these, one hundred and three were not, so far as he knew, subjects of litigation. Of the other ninety-seven, most of them were sent him for the purpose of getting his opinion for use in court. He had rarely been consulted in any litigation cases for injury involving one or more peripheral nerves, and seldom for injury pointing definitely to spinal disease. The explanation was hard to make, for cases of spinal injury and injury of peripheral nerves were not infrequent in hospitals. Possibly in litigation, cases of this class the symptoms were so definite that they were settled in or out of court without consulting specialists. The author differed from Strümpell, who claimed that the genesis of most of the trouble in the litigation cases was psychical, the questions which constantly worried the patient's mind being: "Shall I get damages? How much shall I get? Shall I be able to work afterward?" Notwithstanding the malevolent psychical influences attending these cases—the desire for gain, the desire for putting the best foot forward, the gloomy prognostications heard on the witness stand—he could not accept Strümpell's view for reasons, some of which follow: 1. Under conditions precisely similar one saw the symptoms of traumatic hysteria or traumatic neurasthenia in non-litigation cases, in which the factors referred to were absent. 2. The symptoms developed almost immediately after the accident in many litigation cases, before these factors could have acted. No doubt, however, factors connected with litigation aggravated the symptoms somewhat. Further, the relative frequency of the symptoms in the litigation and the non-litigation cases was about the same. In other words, he could find no symptoms in the one class of cases not present in the other and which would warrant the term litigation hysteria or litigation neurasthenia. In many, but not all of the litigation cases, the patients had worried about the lawsuit, but in the non-litigation cases the patients had also been disposed to worry, though about something else.

Dr. Knapp thought Strümpell had given insufficient weight to the physical influence, and too much to the psychical. He classified the two hundred cases according to the nature of the injury, the symptoms, etc. The injuries took place from railway accidents, getting on or off tramways, getting in or out of carriages,

etc. In but few instances were bones broken. On the whole, the circumstances attending the two classes of cases, litigation and non-litigation, did not differ greatly, and since the symptoms were very similar, the conclusion was drawn that the desire for gain in the one class played only an insignificant part in the genesis of the trouble.

The author stated that psychical shock alone might produce hysteria or neurasthenia, but it was more difficult to answer the question whether physical injury alone, unattended by psychical shock, could do so. His own belief was that psychical shock played a subordinate part, and that physical injury was the important cause. Neuropathogenic heredity, upon which the French laid stress, he had found of minor importance. He was able to obtain a neurotic history in eight cases of hysteria, in seven of neurasthenia, and in a few there was a history of previous ill health.

Dr. Knapp then spoke of the symptoms and said that traumatic hysteria and traumatic neurasthenia had many symptoms in common, the boundary line not being in all instances very clear. Among symptoms mentioned were inability to work, mentally or physically, headache, vertigo, pain in the back and limbs, paræsthesia, rapid pulse, loss of appetite, diminution of urine, exaggerated reflexes, congestions, coldness of extremities, etc. The differential points between neurasthenia and hysteria were mentioned, particularly those relating to contraction of the visual field, hemianæsthesia, or local anæsthesia, and disturbances of special senses of a nature usually regarded as diagnostic of hysteria. While attaching weight to these evidences of hysteria, the author did not regard them as always diagnostic. For instance, in four of the cases of neurasthenia there was contraction of the visual field, without other stigmata of hysteria. But the majority of cases which presented cutaneous anæsthesia and contraction of the visual field were cases of hysteria.

Regarding the prognosis, there had been difficulty in following up cases to determine the ultimate result. In 28 cases of hysteria, 18 of them were litigation cases, 10 non-litigation cases. In the former, 1 patient recovered completely, 5 patients improved considerably, 7 very little, 5 died. Of the 5 that died, 1 died of unknown cause, 1 had improved considerably but died of intercurrent pneumonia and delirium tremens, 1 steadily grew worse and died of a low form of pneumonia, 2 grew worse and died in exhaustion. It would seem from Dr. Knapp's observations that the remarkable recoveries which one heard of taking place as soon as damages were obtained did not appear. A number of cases had continued six to twelve years; they might improve, but still present some distinct symptoms. There seemed to be no direct connection between the intensity of the hysteria and the gravity of the prognosis. The longer the hysteria lasted, the less likelihood of complete recovery. Some cases of neurasthenia progressed more favorably under treatment than hysteria, and, on the whole, he thought the prognosis was more favorable. But he had seen some cases of eight, twelve and even twenty years' duration.

The author then touched upon treatment. He thought some occupation was to be preferred to allowing these patients to brood over their troubles while doing nothing, yet judgment was required, lest they do too much or worry under the labor and anxiety of making a living. These people were apt to be looked upon as extortionists, but facts showed that the accusation was unjust. A considerable number of them never recovered their health, and the amount received in damages was, in the author's experience, inadequate, especially if the expenses of litigation were deducted. In thirty cases the average damages had been about $5,500; at least half was used in litigation, and very few cases came to trial before two years, some not for ten years. The law ought to be amended to hasten the court proceedings, as delay added to the gravity of the prognosis. It was best to urge prompt settlement out of court, whenever it could be done without too great sacrifice.

This is plainly at variance with all previous statements. When Dr. Knapp says that insufficient weight has been given to the physical influence and too much to the psychical, he states a point completely at variance with the experience of men who see railway accidents and traumatic surgery in all their phases. The writer for years has been in charge of one institution under his immediate control, and of others in a supervisory way, wherein are treated from twenty-five hundred to thirty-five hundred accidents annually. These cases represent every phase of traumatism from minor cases to the most violent. Aside from this fact he has, personally, an accumulated record of over thirty thousand cases of railway traumatisms and he makes the assertion fearlessly that the occurrences of traumatic hysteria, neurasthenia, hypochondriasis, etc., in violent injuries, are mere coincidences. We do not believe that Dr. Knapp or any other neurologist can show in these cases anything more or less than a coincidence, not remarkably or wonderfully more frequent than the occurrence of phthisis in these cases. Certain

it is that no student of medicine would claim that traumatism was likely to be followed by such trouble. We maintain that no case of physical injury is at all likely to be followed by any of these neuroses, and that the great cause of their production is entirely psychical. We believe, too, neuropathogenic heredity is a far more potent cause than any enumerated.

For many years we have been an honest and eager student in this direction, and are prepared to state that there is no order or regularity of occurrence; it is as irregular in its manifestation as anything in medicine. To us it has ever seemed that the predetermined mental condition of the medical attendant and the ill advised and coercive relation of distressing circumstance have made more cases of traumatic neuroses than accident. To-day we believe that litigation has more elements of danger in it than accident. We heartily agree with Dr. M. Allen Starr, when he said that he was quite convinced that cases which developed traumatic neuroses were cases predisposed to neuroses before the injury, just as was the case in occupation neurosis. For over twenty years of practice in hospital work in connection with railway hospitals, treating annually from five hundred to three thousand cases, this has been our conclusion. We defy anyone who has honestly studied these cases, from their inception to their cure, to demonstrate anything more than coincidence, and the fact of predisposition. Dr. C. L. Dana said that ten years ago, perhaps five years ago, he would have agreed entirely with the conclusions of Dr. Knapp, but during the last few years the tide of litigation had risen and seemed more frequently to play an important part—that the psychical effect of litigation injured the patient more than the original injury. Finally, we are perfectly convinced, and do not believe that anyone can show to the contrary, that these cases do not occur unless some previous predisposition exists. We have always maintained that early compromise is among the best therapeutic measures. We are thankful to Dr. Knapp for this paper, because he has stated a proposition which courts investigation, and which we believe that neither he nor anyone else can prove. God only knows how many ills predetermined mentality and suggestion have created in patients, helped by physicians. Certain it is that predetermined mentality and suggestion have made many cases of traumatic neuroses.

THE COMING CONVENTION.

The committees having in charge the preparations for the annual convention in Chicago are actively at work, and everything points to an eminently successful meeting. The sessions will be held in the convention hall in the Medinah Temple, which is admirably adapted for the purpose and where, in close proximity to the hall proper, there is ample space available for the display of exhibits and for the treasurer's office. The following papers have already been arranged for:

Dr. John Punton, Kansas City, Mo., "The Treatment of Functional Nervous Affections Due to Trauma."

Dr. Frank H. Caldwell, Waycross, Ga., "Relief and Hospital Departments." Discussion to be opend by Drs. Outten and Chaffee.

Dr. H. L. Getz, Marshalltown, Ia., title not announced.

Dr. Solon Marks, Milwaukee, Wis., title not announced.

Dr. W. T. Searles, Sparta, Wis., "Traumatic Infections and Their Treatment." Discussion to be opened by Drs. Bouffleur and Hoyt.

Dr. Jabez N. Jackson, Kansas City, Mo., title not announced.

Dr. G. P. Conn, Concord, N. H., "Relation of Railway Companies to State Boards of Health."

Dr. C. W. Tangeman, Cincinnati, O., "An Exhibition of the Various Devices for the Determination of the Color Sense of Railway Employes."

Dr. A. L. Clark, Elgin, Ill., "A Case in Practice."

Dr. A. C. McClanahan, Red Lodge, Mont., "Plaster of Paris and the Difficulty of Applying it to Recent Fractures."

Dr. W. R. Hamilton, Pittsburg, Pa., title not announced.

Dr. Thomas H. Briggs, Battle Creek, Mich., "Problems."

Dr. A. C. Wedge, Albert Lea, Minn., title not announced.

Dr. Rhett Goode, Mobile, Ala., "A Case of Osteo-Sarcoma from Railway Injury."

Dr. E. W. Lee, Omaha, Neb., "The Treatment of Burns."

Dr. A. I. Bouffleur, Chicago, Ill., title not announced.

Dr. W. A. McCandless, St. Louis, Mo., "Brain Abscess."

Dr. T. O. Summers, St. Louis, Mo., "Shock in its Relation to Permanent Injury." Discussion to be opened by Drs. Goode and Davis.

Dr. W. B. Outten, St. Louis, Mo., title not announced.

Dr. A. L. Fulton, Kansas City, Mo., "The First Care of the Patient in Railway Traumatism."

Dr. M. E. Alderson, Russellville, Ky., "Medicine and Surgery and Their Votaries of To-day."

Dr. Geo. W. Hogeboom, Topea, Kan., "The Beneficial Influence Exercised by Railway Hospital Associations Upon the Morals of Employes."

Dr. C. B. Stemen, Fort Wayne, Ind., "Accidental or Railway Surgery."

Dr. E. O. Kane, Kane, Pa., "Vinegar in Surgery."

Dr. John B. Hamilton, Chicago, Ill., title not announced.

Dr. James T. Jelks, Hot Springs, Ark., title not announced.

Dr. J. E. Tefft Springfield, Mo., "Tetanus."

Dr. J. D. Milligan, Cincinnati, O., title not announced.

Dr. Henry F. Hoyt, St. Paul, Minn., "Observations Upon and Reasons for a More Complete Physical Examination of Railway Employes."

Dr. James H. Letcher, Henderson, Ky., "The Treatment of Shock."

Of course, the above is not to be regarded as a program of the meeting. It is only a preliminary statement of the papers so far arranged. There will be other papers, as well as clinics and other incidental attractions, to be announced later.

For transportation to and from Chicago members will apply to the proper officers of their own companies, asking them to make the requests for transportation over foreign lines. Members are not expected to ask for transportation for others than themselves, as the following circular which was sent to managers of the leading railways in the country explains:

St. Louis, Mo., March 13, 1897.

Dear Sir:—The annual convention of the National Association of Railway Surgeons will be held in Chicago on May 4-6, 1897. It is not necessary to tell you now what the Association is or how it is striving to make its work of value to railway companies. It is hoped that you will continue to extend to the members of the association the same courtesies as you have extended in former years, viz.:

1. To issue transportation over your own lines to such of your surgeons as may wish to attend the convention.

2. To request transportation for them, as may be necessary, over connecting lines to and from Chicago.

3. To honor such requests made to you by the proper officers of other lines in behalf of their surgeons.

As in former years it is not expected that you will issue transportation for members of the surgeons' families, or for any other parties than the surgeons themselves.

Trusting that you will accede to this request and will so inform the undersigned,

I am yours very truly,

W. B. OUTTEN.

At this writing (March 20, 1897) responses have been received from thirty companies, all without exception expressing the cordial willingness of the management to comply with the requests.

A novel feature of the convention this year will be a "Daily Railway Surgeon"—an edition of the official journal which will be issued every morning, giving a full report of the previous day's proceedings and other matters in relation to the convention. It will be a novelty which will be of great value and assistance to the convention.

SIR JOHN ERICHSEN.

A lecture delivered at University College Hospital, London.

By Christopher Heath, F. R. C. S.

Holme Professor of Clinical Surgery, University College.

Gentlemen:—I could not begin the work of the session to-day without making some allusion to the loss we have all sustained in the death of the President of University College and my immediate predecessor in this chair. I think it will be best to give you a short sketch of this hospital and its connection with Sir John Erichsen. Being here as a student in 1896, you are not likely to know what happened sixty years ago, and it will be interesting for you to learn something of the previous history of this institution.

UNIVERSITY COLLEGE AND THE HOSPITAL.

Let me remind you first that University College was originally called the London University. That institution was the outcome of the superabundant activity of the late Lord Brougham. It was proposed at first to teach everything there, but in 1828, when it was opened as a teaching institution, arts and laws formed one department at one end and medicine another department at the other end of the building; for in those days there was merely one straight block of buildings without any wings. The science of medicine was taught in a way in which it never had been taught before in any London school, by the professors who then

held the several chairs in what in a few years later became University College; but a difficulty arose in regard to the practical teaching of medicine and surgery, which could not be carried out without beds and a hospital. It was at first proposed that Middlesex Hospital should be the teaching place for the practical work, and accordingly Sir Charles Bell, who was one of the surgeons at Middlesex Hospital, was made professor of surgery here, and Dr. (afterwards Sir Thomas) Watson was the first professor of clinical medicine. That arrangement worked for a year or two, but it was soon found necessary that there should be a separate hospital, and accordingly this building was erected on a piece of ground which fortunately had been secured at the time the college was built, and in the year 1836 this hospital was opened. You can judge very well what it was like then, for it is not much changed. This theatre, for instance, is exactly the same as it was then, and it was here that Robert Liston, one of the first surgeons of the hospital, did all his great operations. The professor of surgery who succeeded Sir Charles Bell was Mr. Samuel Cooper, and I may here say that this surgeon must not be confused with Astley Cooper, or Bransby Cooper, who were both surgeons of Guy's Hospital. Mr. Samuel Cooper was an old army surgeon who had seen much service in the Peninsula, and who after the war had become attached to a private medical school, as was the custom in those days. In this hospital he was appointed one of the surgeons, and communications were opened with Robert Liston of Edinburgh, who had made a reputation there as an anatomical teacher and surgeon, and who, though he was surgeon to the infirmary, had not been appointed professor of clinical surgery, Syme holding that position. Liston gladly accepted the offer to come to London, and became the first professor of clinical surgery here, and also one of the surgeons of the hospital. Thus on opening, the surgeons were Cooper and Liston, and Richard Quain was the assistant-surgeon.

LISTON.

Liston soon made his mark here, and if you look back at the contemporary press of that day you will see that his operations attracted large classes and many visitors, and he, in fact, inaugurated a new phase, so to speak, of operative surgery. I believe that up to that time many of the operations which he did had never been performed in London, and he particularly distinguished himself by his operations on large tumors which had been allowed to develop, partly by the neglect of the patient and partly because surgeons of that day rather eschewed interference with them. Now, nothing was too large or too desperate for Liston to undertake. He was over six feet in height, handsome, as you can see from the marble bust in our museum, with large powerful hands, which enabled him to undertake and to perform the very largest operations with rapidity and skill. Let me remind you that this was in the days before anæsthetics, and therefore rapidity was of considerable importance. It is said of Liston that in amputating a thigh, such was the rapidity of his manipulation of the knife and saw that it almost seemed like a flash of lightning. We do not pride ourselves nowadays on our speed; with anæsthesia the patient is insensible and the surgeon can take his time; whether this occasionally leads to over-deliberation and perhaps waste of time, and exposure of the patient to too much anæsthetic, is another matter. At all events, this hospital started as regards surgery under good auspices, and there was a large class of students who "walked the hospital," as it was then termed, and did not do much else. They followed Liston around, and if he did not teach very much they looked at his cases, and with the few crumbs of knowledge thus procured they and the examiners of that day were satisfied.

SYME.

The hospital continued in this way till 1847, and then unfortunately Liston died quite suddenly from aneurysm of the aorta. Cooper had got somewhat past his work when Liston died, and there was of course the difficulty of filling his place. Mr. Quain was then assistant-surgeon, and so also was Thomas Morton, who had married the daughter of Samuel Cooper. But the Council thought that it would not be wise to promote either of these gentlemen, and they therefore applied to Edinburgh for another surgeon, and James Syme, the eminent surgeon of Edinburgh, was persuaded with some difficulty to abandon that city and come to London. This surgeon began his work here on February 14, 1848, Liston having died in November, 1847, and he was received with somewhat mixed feelings. On the one hand, there was a good deal of feeling against him because it was thought that Quain and Morton had not been fairly treated. On the other hand, there was much enthusiasm on his account because of his reputation, and he himself in his written statements, which I have lately looked up, makes no complaint whatever of his reception here. But he found on the whole that the place was not an easy one to fill, and he was here for only three months, for in May, 1848, he sent in his resignation and returned to Edinburgh. Fortunately the chair which he had vacated there had not been filled up, and he therefore dropped into his old position, and there he remained distinguished and beloved till he retired from that position because of age.

ERICHSEN.

Syme having left, there was again a difficulty in filling up the appointment, and I may say that party feeling ran exceedingly high, and—if all accounts are to be believed—there was a good deal of misplaced enthusiasm displayed by the students, so much so that it led on some occasions to the interference of the police. Another complication now arose because Mr. Cooper, feeling that his son-in-law, Mr. Morton, had been unfairly treated, resigned his chair of surgery, and therefore for the moment the hospital was practically bereft of both surgeons. Mr. Quain was, however, promoted to the office of surgeon, and then came the question who should become the professor of surgery. In 1848 the Council solved the difficulty by asking Mr. Arnott, senior surgeon of the Middlesex Hospital, to be professor of surgery, and at the same time they selected two new assistant surgeons, Mr. Erichsen and Mr. Marshall, who were appointed on the same day in 1848. Things now quieted down a little, though disaffection yet simmered, and there were occasional outbreaks; but still, as far as I can learn, affairs went smoothly till Mr. Arnott again found that the position was not quite satisfactory to him, and at the end of two years he resigned his post, and gave up the professorship of surgery and the surgeoncy at the hospital. The Council was now again in difficulty, but I am glad to say that it had the wisdom to appoint Mr. Erichsen to the office. He was appointed surgeon to the hospital, and also made professor of surgery. Order was restored, and the school began again to prosper. That appointment was not made, of course, without some trouble, and the fact was commented on that Mr. Erichsen was only 32, and therefore his experience was but limited. Mr. Quain, professor of anatomy for many years, thought the post ought to have been given to him, and therefore for the next fifteen years he revenged himself by never speaking to Erichsen at all. This seems a very small matter, but I have heard Sir John Erichsen himself say that he felt his isolation very much. There was no one about the hospital from who he could take advice or consult with, and he had to depend entirely on himself—in fact to play off his own bat. That was certainly somewhat trying, but it just shows what the man was, that he was able to overcome all the difficulties and to outlive all the trouble and all opposition, because before Mr. Quain gave up his post, on one memorable day, to everyone's great astonishment, Mr. Quain and Mr. Erichsen walked into this hospital arm-in-arm! How the rapprochement came about I do not know, but from that day forward those two men were friends.

THE FIRST ADMINISTRATION OF ETHER IN EUROPE.

We have so far traced the history of the hospital up to the appointment of Mr. Erichsen; let me pause to remind you of another great event which had taken place in the year 1847. On December 21, ether was administered in this theatre for the first time in Europe, and two operations were performed by Liston, amputation of the thigh and removel of a toe-nail, and from that time the use of anæsthesia spread rapidly to other hospitals and became universal throughout the world.

The introduction of ether as an anæsthetic dates from October 30, 1846. A Dr. Morton, a dentist of Boston in America, who had been led to investigate and experiment on himself and others, found that with ether he could produce complete anæsthesia, as we now call it—for the word was not known then. He spoke to Mr. Warren, the chief surgeon of the Massachusetts General Hospital, and offered to give the anæsthetic for him there, and on October 16, in the same year, ether was administered by Dr. Morton to two patients of Mr. Warren's, and that was the first public administration of an anæsthetic in the world. I have here in my hand a paper recently sent me, inviting me to the commemoration of the fiftieth anniversary of that occasion at the Massachusetts Hospital on October 16, 1896, and it is an interesting historical document. From Boston the news of this entire reformation of surgical practice was sent to England by letter, which came into the hands of a Dr. Boott, who lived in this city. He spoke to Mr. Liston about it, and here, in this theater, on December 21, 1846, ether was for the first time administered in Europe. It is a curious fact that in the last edition of "Erichsen's Surgery" the 22d is the date mentioned, but I have found the correct date by referring to letters of the period. The introduction of anæsthetics in this theater was the beginning of anæsthesia in Europe, and I was only waiting for Sir John Erichsen to return to town from his holiday to suggest to him to come here on the fiftieth anniversary of that day, and address you all on the subject. Unfortunately that is now impossible, but I think you ought to remember that he was present when ether was first given, and that from that date anæsthesia was introduced into general surgery.

AN EPOCH IN ENGLISH SURGERY.

Erichsen's lectures on surgery were highly appreciated, and in 1853, three years after his appointment, he brought out the first edition of his well-known work on surgery. Now that book made, I may say, an epoch in English surgery. I was a student at the time it appeared, and we were then as students obliged to get up our surgery as we could. There was no book really which was quite

satisfactory. There were some lectures by Astley Cooper and by Bransby Cooper. There was "The First Lines of Surgery," by Samuel Cooper; there was Cooper's "Surgical Dictionary," and there was a dreadful book by Miller of Edinburgh, in two volumes, one on the principles and the other on the practice of surgery—as if it was possible to separate the two things. There was also a little book called Druitt's "Surgeon's Vade-mecum," which was then quite a new work. When Erichsen's book first came out it was a perfect godsend to the student; we could get what we wanted, written in good English, easily understood, and thoroughly well illustrated and up-to-date, and I can well remember the gratification which became general on the appearance of the work. The proof of its excellence is that the book has gone through ten editions, and that whereas the first edition, which I show you, consisted of 951 pages and contained 262 woodcuts, the tenth edition, published last year, consists of two volumes together, making 2,500 pages, with 972 woodcuts; and, as is mentioned in the preface, over 40,000 copies have been issued previous to the tenth edition in this country. Editions have appeared in every European language, and in America it has been not merely reprinted, but the American government, during the War of Secession, had a special edition printed and sent to every surgeon in its army, that every surgeon might have a good guide as to surgical practice. I am sorry to say they entirely forgot to remunerate the author, though he took pains to bring the fact under the notice of that government.

ERICHSEN AS A TEACHER.

Sir John Erichsen filled the chair of surgery here for fifteen years, and during those years he taught a large number of students, and I am quite sure that every one of them will say that his teaching was good and to the point. Of course new editions of the book came out, and if you think what the subjects are that Erichsen had to get up in order to keep his book up to date, you can estimate the ability of the man. We are apt to look on surgery at the present time as being almost perfect; every surgeon thinks that perhaps of his generation, and yet what improvements and alterations have been made since the time when this book of Sir John Erichsen's was first published! The whole of the surgery of the head has been altered; we know now more of the anatomy and of the physiology of the brain, and we are able, therefore, to bring surgery to bear much more on that organ. We have localized the centers of the different functions and are able to say exactly where mischief may be. Not only in cases of head injury, but in tumors of the brain, we do not hesitate to open the cranium in a way that was impossible before the days of antiseptics, and with comparatively favorable results. The surgery of the chest is quite a different thing to what it was ten years ago. The surgery of the abdomen has made enormous progress during the last forty years. Why, in my student days, such a thing as ovariotomy was never heard of, and, though a few ovariotomies had been done, any surgeon who proposed to remove a diseased ovary would have almost been thought guilty of manslaughter. Now we open the abdomen for tumors, and to undo twists of the intestine, and to evacuate abscesses; in fact, to make not merely a diagnosis, but to carry out any treatment which may be necessary. The whole of abdominal surgery has been altered, and with it the surgery of the liver and kidneys. No one would have ventured to cut down on a kidney twenty years ago, and it is quite a recent thing that renal stones should be removed and the kidney operated on. Liston was a great lithotomist; he was also a good lithotritist. As to lithotomy, I will undertake to say there is no student here who has ever seen an operation of the kind Liston performed. He always preferred the lateral perineal operation. He was exceedingly dextrous. He could cut rapidly into the bladder and with his powerful hands extract large stones with astonishing celerity and with a fair amount of success. Now we have entirely altered matters as regards this class of cases. In the first place the lithrotrity which used to be done in many sittings with great pain to the patient, is now done in one sitting under an anæsthetic, and the whole stone is washed out; and even if we open the bladder now we most of us adopt the simple method of the suprapubic operation.

THE ANTISEPTIC SYSTEM.

All these things are improvements which have grown up since the first edition of Erichsen's book; and then comes the greatest improvement of all, brought about by an old student of this hospital, Sir Joseph Lister,—the introduction of the antiseptic or aseptic treatment. When Sir Joseph Lister first began to experiment on antiseptics, the details were so disagreeable and so complicated that really I do not wonder at the hospital surgeons of that day being inclined to pooh-pooh the whole thing. Carbolic acid was used from the beginning, and it was first of all mixed with putty. One can hardly conceive nowadays using such horrible stuff, and yet it gave fair results, which improved when Sir Joseph Lister altered his method and took to the gauze and its modifications. There was another difficulty and that was the use of the spray. The spray was without exception the most irritating thing the sur-

geon had to deal with. To be operating under a fizzling spray which wetted you completely, which whistled, and which gave out every now and then, worried everybody and made life unbearable, and rendered antiseptic surgery of those days anything but a comfortable proceeding. Now we have left off the spray, and with more cleanly methods we do with less carbolic acid, avoiding therby many dangers which carbolic acid gave rise to.

I merely want to point out to you that the whole of the antiseptic system has grown up since the days when Erichsen was professor of surgery here. At the end of fifteen years Sir John gave up the professorship of surgery and succeeeded Mr. Quain in the professorship of clinical surgery, and in 1875, having held the same wards which I have now the honor to hold for a quarter of a century, he gave up the position which he had occupied to the satisfaction of all and with great benefit to the school and the patients, and retired into private life. Now, gentlemen, I think you will, from what I have said, be able to appreciate a little more fully than you have hitherto done the difficulties which arose and which must necessarily arise in any new establishment, how they were overcome, and what a large part our dear friend Sir John took in the work. I am quite sure that those who held office under him will agree with me that all found in him a kind friend and one who was always ready to lend a helping hand, and I know and feel that all his old pupils deeply regret that we have been deprived of his presence by death.—British Medical Journal.

Formaldehyde for the Disinfection of Railway Cars.

Mauriac (Journal de médecine de Bordeaux, 1896, No. 33; Centralblatt für innere Medicin, November 21 1896) recommends for preventing the propagation of infectious diseases by railways cars the use of formaldehyde vapor generated by burning methyl alcohol in contact with air and incandescent platinum. He describes a lamp that has been devised for this purpose.

Qualities of the Old-time Surgeon.

John of Arden, the sergeant surgeon of Edward III, in 1346, gives a "Description of ye qualities which ought to be in ye surgeon that performeth any operation of chirurgery: First, that he be devout. Secondlie, charitable to ye poor. Thirdly, to use few words. Fourthly, to avoid drunkenness. Fifthly, to be chaste, both in words and gestures, as well as to fear not. Sixthly not to undertake an incurable disease."—Medical News.

Extracts and Abstracts.

Fractures of the Margin of the Acetabulum.

By Edmund Andrews, A. M., M. D., LL.D.,
Professor of Clinical Surgery Northwestern University Medical School, Chicago, Ill.

A large portion of dislocations of the hip-joint are accompanied with a fracture of the rim of the acetabulum at the point where the head of the bone escaped from the cup. The head strikes with such violence against the thin edge of the rim, that the margin gives way, leaving fragments of various sizes attached to the torn edges of the ligament. Prof. Sims asserts that dead-house examinations show that a very large portion of dislocations of all parts of the body show analogous marginal fractures.

In the standard treatises on dislocations of the hip-joint this fact is scarcely alluded to, and the reader is left to suppose that after reduction the bone will stay where it was put and make no more trouble, whereas in a few cases there is such a gap in the side of the acetabulum that the dislocation is constantly reproduced.

As the patient does not usually die, no post-mortem occurs, and no clear explanation is possible, so the unfortunate surgeon is quite likely to have the blame of a permanent lameness unjustly thrown on his shoulders.

In discussing this matter I do not allude, of course, to the blunders of diagnosis, where an ignorant practitioner mistakes a fracture of the neck of the femur for a true dislocation. Knowledge and care will always avoid this error. But there occur cases of true dislocation with all the symptoms clear and well marked, which either resist all efforts at a reduction short of a cutting operation, or else, being reduced and put into a good position, with the head of the bone squarely in the socket, it slips constantly out again. The standard treatises usually attribute all these cases to three causes, viz.:

1. The hooking of the head of the bone under the tendon of the obturator and adjacent muscles.
2. Hooking it under the sciatic nerve.
3. Flaps of torn capsule falling into the acetabulum in front of the bone and filling it up, thus excluding the head.

All these accidents may occur, and may render positive diagnosis of the cause of difficulty impossible, but I wish to call attention to the fact that in a considerable number of difficult cases the margin of the acetabulum is broken through and its retaining power destroyed.

The following case illustrates the subject:

A young man was overturned in a wagon,

striking his bent knee on the ground, while the wagon fell on top of him, driving his pelvis forcibly down on the femur and causing a dislocation of the hip upward and backward. He was sent into Mercy Hospital to the care of Dr. E. W. Andrews, but as the Doctor happened to out of the city the patient was temporarily brought to my clinic in the same institution. The diagnosis was perfectly clear. There was a dislocation of the femur upward and backward on the dorsum of the ilium. He was immediately etherized, and I made efforts to reduce by manipulation, using a variety of methods. Every effort failed. I then put on the famous old Jarvis' adjuster, without a particle of success. I next applied pulleys, and could get an audible snap like that of reduction, but accompanied at times with something like crepitus. It was all in vain. The bone seemed to go into a correct position, or nearly so, but the trochanter projected out laterally too far, and the bone would not stay in place a single moment after the pulleys were relaxed. The patient began to show signs of dangerous shock and depression. I therefore remanded him to bed and gave hypodermics of digitalis and strychnine.

The next day Prof. E. W. Andrews returned home, and as the patient was his by the hospital rules, I transferred the case to him and suggested that he make a cutting operation. He accordingly again etherized the patient, and after trying manipulation in vain, operated by a perpendicular incision between the outer border of the tensor vaginæ femoris muscle and the anterior border of the trochanter major, fully exposing the cavity of the acetabulum. The upper and outer wall of the cup of the joint was found broken. A large piece of bone was detached about an inch and a quarter in diameter. This fragment remained by one side to the torn capsular ligament in such a way as to shut up the gap like a gate whenever any effort was made to move the head of the bone into the socket. It was only by excising the fragment that he succeeded in reducing the dislocation, and then only by strong abduction of the thigh, thus prying the head of the femur back to its place.

Unfortunately the patient had received at the time of the accident some obscure contusion in the abdomen. In a few days, although there was no evidence of rupture of any of the hollow viscera, he developed a perotinitis and died.

I have met two other cases so nearly like this, that I believe the margin of the acetabulum was fractured. In one the bone would not stay in place a moment. In the other it would remain a few hours in correct position, but always slipped out unless retained by extension apparatus. I kept it in by weight, pulley and adhesive plaster for several weeks, but it went out again as soon as the tension was relaxed. Both patients recovering, there was no autopsy.

My fourth case was different in character. A boy aged ten years came under my care with a hip disease of long standing. I suspected abscess. A few days later the hip went out of joint as he lay in bed, the dislocation being upward and backward, and fluctuation became distinct. I opened down upon the parts and uncovered the joint. I found a slightly tuberculous condition affecting mainly the upper margin of the acetabulum, and involving the head of the femur only very slightly. The tuberculous caries had thinned and weakened the upper and outer margin of the socket until at last the remnant broke away under the pressure of the head, and a true dislocation ensued. I excised the head of the bone and gouged away all softened portions about the acetabulum. The patient made a good recovery.—Fort Wayne Medical Journal-Magazine.

Fracture of the Pelvis; Acute Myelitis.*

By P. S. Root, M. D., Monroe, Mich.

I have thought to interest the members of this society by the presentation of two rather unusual cases; one surgical and the other medical. One will serve to exemplify the curious in surgery; the other the uncertainty of the element of prognosis.

Case I—Fracture of the Pelvis.—G. S., aged nineteen years, of athletic build and very healthy parentage, on the 9th day of October, 1895, while sprinting with a companion, felt something suddenly give way in his left hip. He fell to the ground and was assisted to his home, where I saw him a few minutes afterward. An examination demonstrated that he had fractured the pelvis. The location of the fracture was at the anterior inferior spinous process of the ilium. As you are aware, the straight tendon of the rectus femoris muscle has its origin at this process. This muscle is one of the four which form the quadriceps extensor which has its attachment on the tibia. It was, then, the physiological action of this muscle that produced a fracture of this process. The piece of bone separated was about two inches long by one inch in depth.

As to the matter of treatment, two courses presented themselves; one to cut down and wire the separated fragment to the body of the ilium; the other to attempt reposition by muscular relaxation. I found by flexing the knee and thigh the fragment could be quite perfectly replaced. I therefore placed the leg upon a double inclined plane, which afforded considerable relief to the patient. The young gentleman had just received an appointment

* Read before the Monroe County (Mich.) Medical Society.

to West Point and his father was extremely desirous that a perfect result be had; hence on the following day the case was seen by Doctors H. O. Walker of Detroit, and C. T. Southworth of this city. These gentlemen concurred in my diagnosis and treatment, but for greater comfort to the patient a long splint, with a double incline and a foot rest was advised. However, for the most perfect relaxation of the quadriceps extensor I think a triangular splint, perpendicular at foot and apex at gluteal region, would better fulfill the indication. It is possible such a splint would be somewhat tiresome. The splint we had constructed permitted of some up and down movement of the foot, which was greatly appreciated by the patient. The leg and thigh were protected by cotton and confined to splint by roller bandage. The limb was maintained in this position for nearly five weeks, when, upon removal of the splint, the union of the fracture was found to be quite firm and the patient able to walk with a slight limp.

The details of this case have been given because of the rarity of such fractures, when produced by muscular action. Hamilton reports one case in a man of seventy years who fractured the ilium while getting up from his seat in a street car. Ashhurst reports this case from Hamilton. No other cases are reported by such surgical authorities as I possess. Of course, fractures of the pelvis are common as a result of falls or mechanical injuries.

Case II—Acute Myelitis.—S. M., aged sixty-nine years, of Jewish nationality, well nourished and without history of any severe previous illness. I was asked to see the patient Oct. 17, 1895, and found him suffering with severe cystitis and complaining of painful sensations in the feet and spine. Temperature 100 degrees, pulse 96. The cystitis appeared to have been the result, or an extension of urethral inflammation contracted some months previously. An examination of the urine showed it to be of acid reaction, pus and albumin constituting about one half the volume. Filtration and an examination for albumin showed about ten per cent. indicating the involvement of the kidneys in the inflammatory action. The microscope revealed pus, bladder and renal epithelia in abundance, also some casts.

We had, then, cystitis, with also a pyelonephritis from contiguity. I would call attention here to the acid reaction of the urine. Such reaction is found in pyelitis involving one kidney, but not in cystitis. Cystitis, especially if chronic, gives us ammoniacal urine or a urine of alkaline reaction. It must also be remembered that suppurative cystitis is liable to result in pyelitis by the simple process of extension. I cannot speak as to the nature of the primal inflammation of the urethra, whether it was specific or simple. We will now revert to the nervous symptoms. The tenderness over the spine was accompanied by a band-like restriction around the chest and marked formication and tingling of the feet. These last symptoms occasioned the patient so much suffering that the frequent hypodermic administration of morphine was necessary. Hot water applied to the dorsal region of the spine produced intense pain, but below this point very little sensation was manifest. In about four days the formication and tingling gave place to paraplegia with anæsthesia. Restlessness continued to be a marked feature. There were no special bladder or rectal symptoms, except constipation and some incontinence of urine. Temperature now ranged from 100 to 103 degrees; pulse from 75 to 90. About this time he began to complain of numbness of both hands, with tingling and an extension upward of the soreness over the spine. With the advent of these new symptoms the respiration became hurried—36 to 40—pulse, 120 and upward. The band-like sensation completely encircled the chest and was a source of great distress. There were indications of the formation of bed-sores, but by great care and the use of air cushions this complication was avoided. The patient could move his hands, but otherwise he was absolutely helpless. He took nourishment in liberal amounts, but notwithstanding appeared to be failing. The exhibition of morphia was necessary in order to procure any sleep whatever. At this time, October 21, 1895, the case was seen in consultation by Doctors Heath and Masecar, who concurred in the diagnosis. Our prognosis was that he would live but a few days at most. He, however, continued in about the same condition, and on November 5 Doctor David Inglis of Detroit was called in council. He agreed perfectly both with our diagnosis and our prognosis; still the man lived on. His legs became edematous and his muscles underwent rapid atrophy. His hands were useless, though they could be moved.

As to the matter of etiology, it may be said that the most common causes of myelitis are injuries, exposure, syphilis and diseases of the vertebræ. In the case under consideration I do not believe that any of these factors had a causative relation. I look upon this manifestation of disease to be the result of an infective process, which had its origin in the suppurative inflammation of the bladder and kidneys. Cases of myelitis due to septic infection are rare and by some are said not to exist at all. We have, however, the authority of Sir William Gull in confirmation of such a possibility. He reports several cases as being due to gonorrheal infection—the infection either being specific or purulent. He reasons that such infection

may produce diseases in the spinal cord after the manner in which joints are involved. Dickinson writes: "Myelitis after gonorrhea is a sequence which may be considered to be beyond doubt; and it is at least probable that a similar result may now and then ensue after other kinds of suppurative diseases." The more recent advance in our knowledge of septic diseases lends much support to this conclusion. In cases of this origin the prognosis is far better. As a rule, the chances of recovery are very poor, nearly all cases dying within a few weeks, or months, at most. I recall a patient under my observation at the Monroe County Poor House, who was sent there with the diagnosis of locomotor ataxia. This man had acute myelitis and died in four weeks. I found retention of the urine to the amount of eight quarts. He had paraplegia, which condition was followed by bedsores in three to four days. In this case the disease was supposed to have been caused by exposure.

The diagnosis of myelitis as a rule does not offer much difficulty. The usual sudden onset of the paralysis, the absence of contractions, the disappearance of the reflexes, and the band-like constriction are usually sufficient to make the diagnosis. We may also have incontinence of urine and fæces, and bedsores are quite likely to occur. We may not, at all times, find this complete array of symptoms. The location of the disease and its extent will often vary the symptomatic manifestations; but, gentlemen, it is the unexpected which is likely to occur. Our patient has practically recovered, and has kindly consented to present himself for our inspection. He is not perfectly well, and yet I think you will agree with me that he is a pretty lively dead man. You will notice that the reflexes are absent and his gait is peculiar. His urine is free from pus and albumin, and there are no bladder symptoms. There is, however, yet considerable anæsthesia of the extremities. These symptoms, he says, are gradually improving.

Speaking briefly as to the pathology of myelitis, if the cord be exposed there may be found the results of inflammatory action, such as injected areas, alteration of the gray substance with more or less effusion. In some cases no change can be noticed microscopically; yet the microscope will probably never fail to show some lesions. The nerve tubes will be swollen, tortuous and broken; the axis cylinders will have their places taken by oil globules; pus corpuscles may or may not be seen. The fact that in many cases no lesion has been thought to have existed has given origin to a so-called reflex paraplegia, but year after year we find the functional diseases decreasing. Pathological researches are constantly bringing into view structural alterations. So, in myelitis, as in other spinal diseases, we shall find the results of pathologically morbid processes. If the alteration in the spinal cord has gone beyond a certain degree, we cannot reasonably expect regeneration and consequent restoration of functions. Still there are those who believe that in lesions of some magnitude, involving the cord, recovery may occur with more or less perfect restoration. It will not, of course, be inferred that we consider that there is any direct communication between the spinal cord and this man's seat of suppurative disease. The irritation resulting in the spinal lesion may have been simply a metastatsis, a chance bacterial infection; or it may have been the manifestation of some poisonous toxin, in which case the medium by which the bacteria or toxin was conveyed could have hardly been other than the blood. There is, however, another possibility in the case, and that is the direct nervous influence of a disease in close proximity to the spinal cord. Physiological researches have demonstrated the possibility of inflammation being produced by constant or oft-repeated nervous shocks or irritation applied to the cord.

As to treatment, I may say that patient was given nearly all the remedies recommended for this disease. Early I ordered wet cups to the spine, and in due course he was given belladonna, ergot, bromide and iodide of potassium. I question the propriety of making strong counter-irritations, or applying intense cold over the spine in myelitis. Every effort should be made to conserve the vitality of the skin where the tendency is so great to the formation of bedsores. After the active symptoms began to subside, strychnine and iron were given, and thorough rubbing of the extremities every day was ordered. As the improvement became more manifest, I used the Faradic current with seemingly great benefit in restoring the atrophied muscles. The pyelitis was treated mainly by the balsamic preparations, sodium benzoate, tincture chloride of iron, pichi, etc. The one remedy which I found most efficient was the oil of sandal wood.

I would gladly have gone more into details save for the fear of becoming tiresome. I trust the discussion will bring out many points that I have omitted to mention.—Physician and Surgeon.

The Medical Profession in France.

It is proposed in some of the French medical journals to establish among the doctors of France a professional Court of Honor. The functions of this order will be to purge the profession of disreputable members, to suppress disreputable practices, and in general to take the part of a keeper of the professional conscience.

Miscellany.

Suit for Damages for Ante-Natal Injuries.

It is stated in the Medical Standard that a suit has been instituted against St. Luke's Hospital of Chicago, by Thomas Edwin Allaire, through his mother, which is reported to be the first case of its nature in this country. In February, 1886, three days before the birth of the plaintiff, his mother, Ada A. Allaire, was injured in an elevator at the hospital. When the plaintiff was born it was found that his left leg was drawn and the muscles were contracted. The limb is three inches shorter than the other one, and he will be always lame. For these injuries received before his birth the youth wants $50,000 damages.

Cause of Untoward Effects Ascribed to X-Rays.

Dr. Howard Lilienthal of New York, writing to the editor of the Medical Record, says: It has been my fortune to observe certain cases of dermatitis, loss of hair, etc., in patients who have been exposed to the action of X-rays. Numerous other instances of burning, depilation and bleaching have been reported by different observers. These annoying and unlooked-for accidents tend to lessen the frequency of resort to a method of investigation which I believe to be too valuable to be thus limited. Let me, therefore, call attention to what Mr. Tesla has said in a recent number of the Electrical Review. He believes the evil effects are not due to the X-ray itself, but to the incidental formation of ozone. Since the appearance of the contribution to the Review, he has kindly expressed himself further on the subject to the writer. He says in a recent letter: "Since I made those statements (in the Electrical Review) I have gained additional evidence that the X-rays themselves are incapable of producing the actions reported, and that they are due to ozone and possibly nitrous acid. I wish to add that also heat may be to a certain extent responsible." He goes on to state that the effects always follow long exposures at short range, and he believes that the long-continued heat may cause desiccation of the skin, with subsequent dermatitis. As to avoiding the chemical effects, Mr. Tesla goes on to say: "I have suggested a remedy, consisting in static screening of the person in any way. The most perfect way is to make a conducting enclosure of wire or thin sheets, and connect the latter to the ground. The person should then be in that chamber, and the bulb outside of it." He goes on to say that in his experience this method will guard against ill effects. Aluminum, which is transparent to X-rays but which will not allow chemical substances to pass, might be used to make the screen.

Mr. Tesla attributes most of the reported accidents to the use of insufficient instruments, necessitating too close and too long exposures.

The writer, in confirmation of Mr. Tesla, desires to call attention to the occasional occurrence of bleaching, which is a characteristic effect of ozone.

Bullets in the Brain and the Rœntgen Rays.

A. Eulenburg (Deut. Med. Woch., August 17, 1896) relates to cases in which it was possible to localize bullets in the intra-cranial cavity by means of the X-rays.

Case I. A man, aged 18, accidentally shot himself in the head with a revolver. The bullet entered 3½ centimeters above and 2 centimeters in front of the attachment of the ear. There was complete unconsciousness until the following morning. On the third day a left-sided homonymous hemianopsia developed, and then a left hemiplegia. The bladder was temporarily paralyzed. The hemianopsia disappeared on the tenth day, and the hemiplegia gradually got better, with the exception of the lower part of the leg. The patient was lame, but could walk. At the end of the seventh week Eulenburg found the lower face muscles weaker on the left side than on the right, and also the left arm weaker than the right. The gait was faltering, and the left leg stiff. Movements of the foot and lower leg were only just possible. Sensation was considerably affected. There was pain in the back of the head. Progressive improvement ensued. Eulenburg thought that the bullet had penetrated to the right of the sella turcica, injuring the right optic tract and the right crus. By radiography Buka showed that the ball was in the middle fossa of the skull to the right of the middle line.

Case II. A man, aged 33, attempted suicide ten years ago. The revolver wound was in the hinder part of the right temporal region. At first there were signs of intra-cranial pressure. For the first four years only slight symptoms were noted. Attacks of pain in the head supervened, and the patient thought that the bullet must still be present. He was then in an asylum for five years, and discharged as incurable. After his discharge he seems to have been able to work. When seen by Eulenburg the man was pale and wasted. Hardly a trace of bodily or mental symptoms could be made out. There was occasional headache in the right supra-orbital and temporal regions. There was thus no clinical evidence that the bullet was still present. It was, however, shown by Buka, by means of the Rœntgen rays, that the bullet was situated in the middle fossa of the skull behind the right orbital fissure.

Brissaud and Londe (Sem. Med., June 24,

1896) report a case in which a man had been struck by a revolver bullet (caliber 7 millimeters) in the middle of the left frontal eminence on August 4, 1895. Various symptoms followed, and finally a spasmodic left hemiplegia of both limbs and the face remained. The upper fibers of the facial, the motor oculi, and the masseteric nerves were not involved. The Rœntgen rays showed the outline of the skull, the fronal eminence and sinus, the maxillary sinus, petrous and malar bones, zygoma, orbital cavity, etc. The bullet was seen situated in the posterior region at the level of the second temporal convolution, probably above the tentorium. This position corresponded exactly with the direction of the track deduced by the resulting paralyses. The chief interest, besides the exact localization of the missile, consists in the fact that the bullet, being in the temporal region could not be the cause of the hemiplegia. The latter was due to the section of fibers met with by the bullet —that is, it had a capsular, not cortical, origin, and therefore could not have been benefited by any operation. An exposure of an hour and three-fourths was given, and the image would have been still clearer but for a slight clonic movement of the head.—British Medical Journal.

A Wonderful Escape.

The Lancet is responsible for the following account of an almost incredible escape: "William H. Bartlett, aged 18 years, a few days ago fell down the shaft of North Biddick pit, in the county of Durham, a distance of 270 feet, into some 13 feet of water, and upon being rescued was found to have sustained trifling injuries—both wrists sprained, and a few scalp wounds."

The Drainage of Wounds.

Maj. Charles Adams (the Medical Standard, December, 1896) considers that drainage must be employed when there is free pus in the tissues or cavities; in all infected wounds; all wounds that have been infected by chemical irrigation; all wounds whose surfaces have been devitalized by traumatism, operative or otherwise; wounds in the very thick adipose tissue, the oil poured out in such incisions being inimical to healing; amputation wounds, in which the flaps are thin; wounds of the neck wherein extensive connective tissue planes are opened; penetrating and perforating wounds of the brain; all closed wounds whose surfaces cannot be approximated accurately by suture or compression (cases in which under absolute asepsis we expect filling of cavities by blood clot.) Drainage should be also employed in cholecystotomy (tubular drainage of the gall bladder); in operations on the common duct (tubular drainage surrounded by gauze packing); operations upon pancreatic cysts (tubular drainage after attachment of cyst to anterior abdominal wall); hydronephrosis and pyonephrosis (lumbar tubular drainage); tuberculous ascites (tubular and gauze drainage combined); all cases of abscess involving any part of the peritoneum in its wall (tubular drainage); all cases of operation upon the peritoneal cavity, when copious serous effusion is to be expected.

Dermatitis Caused by Roentgen Rays.

Henry C. Drury (British Medical Journal, November 7, 1896) reports the case of a man, aged thirty-five years, on whom an attempt was made to get a Röntgen photograph of the renal region. The exposure lasted one hour. Three hours later he felt nausea, which, however, passed off. Six days later another attempt was made, this time the exposure being with a somewhat stronger battery for an hour and a half. After the patient left the laboratory he again felt nauseated, and had to take some brandy before reaching home. Next day the abdomen was slightly red; there was no itching or pain. On the third day redness was more intense. On the fourth day vesicles appeared; these increased in size and number, ran together, broke, and formed eighteen days after the second exposure a patch seven and a half by eight and a quarter inches. It looked like an irritative eczema, with exfoliated epidermis and a profuse sero-purulent discharge. Sixteen weeks after the second exposure the sore was three by three and a half inches and covered with a thick leathery insensitive false membrane. The patient improved somewhat later, but at date of writing was still unwell.

Asepsis and Gallantry.

The Hungarian government, says the New York Medical Record, permits women to study medicine if they so desire, but one of the professors at the University of Budapest has recently proclaimed that he has something to say in the matter. Of the five women now studying medicine there, one has a remarkably fine head of hair, which the professor of surgery says must come off before she can be permitted to attend his clinics. The reason he gives for his prohibition is that "wool carries infection."

WANTED—We will pay 20 cents for a copy of The Railway Surgeon of Vol. III, No. 18, date January 26, 1897. Address The Railway Surgeon, Monadnock block, Chicago.

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INJURIES OF THE HAND.*

BY EDWARD O. PLUMBE, M. D., ROCK VALLEY, IOWA.

Of all the lesions that come under the care of the railway surgeon injuries of the hand, including the fingers, are by far the most frequent. Indeed, a very large proportion of railway employes, particularly those engaged in train service, will be found to have sustained injuries of this character. We are not here to inquire the cause. That is not as surgeons, our province; we are content to know that the condition exists.

To classify these lesions would be an almost hopeless task, so protean are their aspects. One thing, however, must be borne in mind; apparently severe injuries do not always produce the most serious results, and vice versa. Allow me to say also, and say most emphatically, that nowhere in the whole domain of railway surgery is conservatism more strenously demanded than in these injuries. The knife, as far as possible, should be the exception, and not the rule, in these cases.

Prothetical mechanics, with all its ingenuity fails, and perhaps always will fail, to produce a competent substitute for the human hand, with its wonderful prehensile faculty. It, therefore, becomes our bounden duty to make a determined and persistent effort to save any portion of a hand, finger or thumb, remembering, that in no other portions of the body are reparative processes so prompt and certain; except, perhaps, in the tissues of the scalp and face. It is wonderful what strength and mobility these fragmentary hands and fingers will develop, and their usefulness and value. I recall the case of a brakeman who had lost the whole radial border of the hand, including the fourth and fifth metacarpal bones; the third and fourth fingers entire, nearly the whole of the first and second nngers, and the second phalanx of the thumb. I succeeded in saving stubs of the fore and second fingers and what was left of the thumb of this right hand. By the aid of these three stubs, he writes, feeds himself, and does many other things much better than he could with any artificial substitute.

Antisepsis has done much to assist us in this good work of conservatism in these injuries, but I appreciate as fully as anyone the difficulties that beset the path of the railway surgeon in attempting to secure antisepsis, more especially in injuries of the hand and fingers. This should only cause us to redouble our efforts to secure the desired end. In regard to antiseptics in these cases, I say candidly, after using, and seeing it used more than 25 years, I do not like carbolic acid. For the preliminary cleansing I use soap and water as hot as can be borne; water that has been boiled and allowed to cool; followed by a weak solution of lysol, with ether or turpentine, when required to remove oil or grease. Then a weak solution of bichloride of mercury or a saturated solution of boric acid. If a moist dressing is desired afterward I continue the boric acid solution. If a dry dressing I use equal parts of boric acid and acetanilid triturated into a fine powder. The dressings should be loose and the hand, for obvious reasons, kept elevated as much as possible. The laity have acquired an idea that carbolic acid is an antiseptic, and we frequently meet cases treated by them on the principle that if a weak solution is good a stronger is better, many times with disastrous results.

A practitioner, in an adjoining town, prescribed a 25 per cent. solution of impure carbolic acid in linseed oil for a comparatively trivial contusion of the finger. The result

* Read at the fourth annual meeting of the C., M. & St. P. Railway Surgeon's Association, at Chicago, November, 1896.

may be imagined. After 48 hours' of this application all efforts to save the finger were fruitless, and I was compelled to amputate. In many injuries of the fingers all that is needed is to "snip off" with suitable forceps the protruding bone, leaving the soft parts alone. A majority of these cases will be found to do better under this treatment than if a systematic amputation is performed. You are more likely to avoid "clubbing" and to preserve a more sightly finger tip. To avoid clubbing, if possible, use integument instead of muscle, from the palmar surface. If compelled to amputate above the middle of the second phalanx stitch the ends of the flexor tendons to the periosteum; otherwise there will be a tendency of the remaining portion of the finger to flex backward, and its use by the patient will be hampered and limited.

Injuiries to the palm of the hand, not seriously involving the fingers, do not always demand amputation, depending largely on how far the blood supply to the fingers has been interfered with. If there is the slightest possibility that the hand can be saved, after the most thorough possible disinfection, let our motto be: Wait, for success will ofttimes crown our patient delay.

I recall a case where the whole hand except the thumb, fore and middle fingers, and including the ring and fourth fingers, seemed ground to a pulp. The fragments of the metacarpal bones were removed and a warm antiseptic solution applied. Death of the ring and little fingers subsequently ensued, and they had to be removed with their metacarpophalangeal articulations, and a portion of the ulnar border of the hand. Otherwise the patient did well, and has as useful, though perhaps not as ornamental an extremity as could be expected under the circumstances. I may also say that the habits and physical condition of the patient, on account of his intemperance, was decidedly against his recovery. I neglected to state that I have almost discarded iodoform as a dressing. Patients complain bitterly of its odor, and I do not blame them, and I am satisfied it possesses no superiority over many other less malodorous antiseptics. While engaged in writing this paper, I have read with much interest an article by Dr. Bouffleur, in the "Chicago Clinical Review," which illustrates, collaterally, the utility of a judicious conservation in many cases of railway surgery. One case in particular which he notes, and wherein in my opinion, amputation would have been certainly fatal, the patient owes his life and limb to the exercise of prudence, caution and antiseptic treatment. Thirty years ago that patient would have been inevitably doomed.

In conclusion let me ask the gentlemen present to give us their views and experience in injuries of this character and freely criticize anything I have said. Gentlemen, give us your experience; one grain of it is worth pounds of theory. As I have said before, I for one, am here to learn; and while willing to contribute my individual mite, I come to hear rather than to be heard.

DISCUSSION OF DR. PLUMBE'S PAPER.

Dr. T. C. Clark: I recall a case of injury to the right hand in a young man who was greasing a gang saw and caught his hand in the cogs. In this case the metacarpal bone of the middle finger was broken in the middle; the finger itself was fractured in three places and nearly severed and it was ground full of grease; the wound was saturated and impregnated with it. I removed the finger and cleaned out the wound thoroughly and dressed it with a bichloride solution, and put on a splint to secure the metacarpal bone; there was a slight oozing from the wound. I removed the splint in four days and the man had the use of his hand. The occupation of the individual has a good deal to do with the surgery and also the portion of the hand injured has a good deal to do with it. The first joint of the forefinger is worth more than the whole of a man's little finger, and one joint of the thumb is worth more to a man in some occupations than the little finger or ring finger. It would be safe to say that the thumb and forefinger are worth more than any other portion of the hand, and every inch or half-inch or quarter of an inch we save is of inestimable benefit to a laboring man, and bears the same relation to the hand that the big toe does to the foot. Saving the big toe means saving the support of the foot. In any injury to the palm of the hand threatening suppuration early incisions should be made. Waiting is liable to be followed by disastrous results.

Dr. Binnie: I think all these papers are in the right direction and I do not desire to criti-

cize them in any way, but there is one question I woud like to ask the gentleman in regard to boric acid and acetanilid. At what stage he would apply that?

Dr. Clark: As a primary dressing. I meant to speak of using acetanilid. I use it as a primary dressing, and use it clear. I used it three weeks ago. A man was caught in a cog-wheel and the flesh was mashed to the bone in three places. I applied acetanilid, with the result that it dried the wound up.

Dr. Binnie: Have you ever had any bad results from it?

Dr. Clark: I have never had any bad results from the use of acetanilid. I consider it best as a primary dressing. I would like to ask the gentleman who has just spoken what he uses?

Dr. Binnie: I use acetanilid, but reduce it four or five times. I have used it in connection with boric acid and bismuth.

Dr. Drake: In those cases of mashed hands we can do more in saving, I think, than in any other injuries we have to treat. Every piece of skin and every piece of tissue that can be saved should be saved. I usually use in my operations, as an irrigation, a solution of carbolic acid. Carbolic acid, properly used, has never done any harm. Of course, you can abuse it and it will do a great deal of injury. I think as a stimulant carbolic acid is much better than alcohol when we use it with water just as hot as we can operate in. The doctor's hand is the guide as to the heat to be used.

Dr. Binnie: I have been pleased and displeased with carbolic acid. That has depended on the strength and conditions under which I used it. I use alcohol now more than any other one thing. I reduce it from four to nine times with hot water.

Dr. Philler: I believe continuous submersion in tepid water is one of the best things for wounds in the hand.

The Columbus Medical Journal has removed from 150 East Broad street to its new quarters, 68 Buttles avenue, Columbus, Ohio.

It is reported that the Southern Railway Company will soon begin the erection of three large hospitals along its line in the south, and an effort is being made to induce them to take the uncompleted Erlanger Hospital at Chattanooga, Tenn.

ABOLITION OF PRIMARY AMPUTATIONS IN THE TREATMENT OF MANGLED HANDS.*

By Jos. A. Crowell, M. D., Iron Mountain, Mich.

On June 6, 1896, E. K., a stationary engineer, while adjusting a nut on the eccentric of his engine, had his left hand caught and forcibly crushed between the crank wheel and the pillow-block, a space just sufficient to admit an ordinary lead pencil. He was sent at once to the hospital, and the attendant wrapped the hand with gauze moistened with a solution of creolin. A few moments later when examined by Dr. Cameron and myself, it was found that the force had been applied along a line corresponding with the heads of the metacarpal bones and the first phalanx of the thumb, opening these joints, crushing bones, lacerating the soft tissues and stripping all before down to the first phalangeal articulations; the capsules of these joints were torn open and most of the bones dislocated, leaving merely a thin layer of contused tissue on the palmar surface of the hand. If ever a hand looked as if amputation of all the fingers and a part of the thumb were an absolute necessity, this certainly did, but so little was to be lost and so much could possibly be gained by delay, and as the patient's right hand had been crippled by a previous injury, we decided not to amputate. The patient agreed after an explanation, and he was anæsthetized to allow of more complete examination and dressing.

After a thorough irrigation with a warm solution of creolin, all dislocations were reduced and the capsules of the joints lightly closed with interrupted silk sutures that had been antiseptically prepared after the manner of Kocher, by boiling in a one per cent solution of arsenous acid. Displaced fragments of bone were replaced, and the shredded soft tissues brought as nearly as could be into their normal relative positions, the whole dusted with iodoform, swathed with sterile gauze wet with a saturated boric acid solution, and the usual cotton and rubber tissue applied, and the patient put to bed with the arm elevated. Later a small opening was made in the rubber tissue through which the boric acid solution was fre-

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quently applied for forty-eight hours. There was an astonishingly small amount of tissue devitalized, consisting mainly of shredded tissue and small islands in the dorsal integument, and although moist dressings were continued until these were all thrown off, the wound rapidly closed with the exception of two sinuses, through which small pieces of necrosed bone were discharged, and to-day (five months after the receipt of the injury) the patient has a useful hand. The metacarpophalangeal articulations admit of full motion; the phalangeal joints are partially ankylosed, but the function of the thumb is perfect, and he can pick up the smallest objects between the thumb and any finger, grasp and use a knife or fork, hammer or chisel, and easily handle the levers of his engine; in fact, his left hand is of more use than his right, and a more grateful man it would be hard to find.

I report this case because it is such as this that we, as railway surgeons, are constantly meeting, and because I believe that our usefulness as railway surgeons is enhanced far more by our ability to save, or our custom to attempt the preservation of the function of a hand or finger, or even the part of a finger of one of our unfortunate brakemen, than in our readiness to perform any of the rarer major operations, or even in our ability to remove a slightly reddened and inflamed appendix, through an inch and one-half incision, from the abdominal cavity of our division superintendent. In adding my modest plea for such extreme conservatism in the treatment of these injuries as to amount practically to the abolition of all primary amputation of the hand or fingers, I am well aware that I am thrashing over old straw, so long has it been the approved rule of action to conserve every part of a hand possible in all whose principal occupation was that of manual labor. Much has been written lately advocating conservatism in the surgery of such injuries, in which, a few years ago, it was but a question of when and how much to amputate. Prominent among the advocates of this newer and better surgery is our worthy secretary, who not later than May last, read a most interesting and instructive paper at the annual meeting of the National Association of Railway Surgeons, at St. Louis, which was discussed in a manner so agreeable that one would be led to infer that such primary amputations were exceedingly rare; but notwithstanding all this and despite all that has been said, and all that has been written, hands and parts of hands continue to be primarily amputated. Nor is the reason far to seek. Our passionate ardor in the pursuit of primary union in nicely coaptated flaps; our modern dread of even the semblance of suppuration; the exaggerated significance of lengthened temporary disability; our everpresent apprehension of stiffened joints and crooked fingers, whose owners, traveling about on wheels are ever ready and willing to exhibit with anathemas for the doctor that "did not set it right," and the consequent subtle consciousness that amputated members, like devitalized humanity, tell no tales—each and all tend to sway us just a little toward the knife. And we are many of us conscious of the fact that we have not always given that benefit of the doubt to the injured little member which our experience, often the result of provoking obstinacy on the part of our patient, has demonstrated might profitably have been done.

If then we are to defer the amputation of these mangled members, what shall we do? What do we seek to obtain? The prevention of sepsis and the restoration in whole or in part of normal function. Schimmelbusch says that there are three conditions favorable to the infection of wounds: (1) The presence of blood. (2) The collection of wound secretions. (3) The presence of loose or badly nourished pieces of tissue. Now all of these conditions we have exemplified in a mangled hand, and more often, yes, nearly always, we have the presence of septic foreign bodies; so that our treatment to be safe, must be that of an infected wound; it must not only be aseptic, but it must be antiseptic. And while Zimmerman has demonstrated that it is not possible to sterilize with certainty pieces of flesh that have been momentarily contaminated with micro-organisms by a contact of five minutes with a 1-1,000 sublimate solution, he also has shown that the intensity of the infection was very much lessened by a marked diminution in the number of colonies, and that they took a much longer time to appear. If this is true, then post-traumatic antiseptic applications, if extremely bland and long continued, must materially assist in the destruction of these

colonies by the antiseptic salts of the blood serum or the continued attacks of the phagocytes. So, then, while our treatment must be antiseptic, it should be by the use of only the mildest of solutions, for we must not forget that while the rendering of the wound aseptic is perhaps of paramount importance, almost equally so is the restoration to vitality of doubtful tissues, and at a time when histolysis or revivification trembles in the balance, any irritant, be it never so mild, may turn the scale the wrong way. Under all these conditions, we believe that the ideal treatment of these injuries would be by the continuous submersion in a constantly changing current of a physiological salt solution, and while this may savor more of a mechanical than of chemical antisepsis, the former is of far the more importance; but sodium chloride is by no means an impotent germicide, and certainly one of the earliest known antiseptics. But unfortunately the ideal is not always the most practicable, and perhaps all things considered, the most satisfactory results are obtained by continuous antisepsis in the form of the antiseptic gauze poultice, thoroughly moistened and frequently changed. I care not what particular antiseptic you use; boric acid, carbolic acid, creolin, lysol, acetate of aluminum, or one of the newer silver salts so highly recommended by Crede, but whatever you use, let it be mild. How mild some of these solutions may be and yet be potent, Prudden has shown us by ascertaining that the growth of the staphylococci may be completely stopped by corrosive sublimate in the proportion of 1-300000, boric acid 1-800 and carbolic acid 1-850. In our little hospital we have for years habitually used a saturated boric acid solution, but a very much weaker one would undoubtedly answer equally well and possibly better. These poultices are by far the most grateful to the patient, for with these and a well-elevated arm he will be almost free from pain. And right here I wish to say, that the doctor who dresses a lacerated finger by thoroughly irrigating with his favorite antiseptic, dusting it with sterile iodoform, covering with gauze, and over all neatly applying with beautiful reversed turns a roller bandage, never himself had such an injury similarly dressed, or if he did he howled all night or until his good mother removed the dry dressing and put on a nice warm flaxseed poultice. Dry dressings have their places, iodoform is a useful drug, but together they were never intended for the primary treatment of lacerated and contused wounds.

After forty-eight hours of such continuous disinfection, when all probable danger of primary infection has passed, we may attempt such permanent adjustment of tissues as may appear most conducive to the restoration of normal, or as near as may be, normal function. Wholly devitalized members should be removed and sloughing pieces of tissue clipped off a line or more below rather than above the apparent line of separation, for the presence of necrotic tissue, while implying the presence of saprogenic bacteria, does not necessarily include the presence of any pyogenic cocci, or hinder an aseptic healing of the wound. Fractured bones must be reduced, and even when badly comminuted these may be maintained in fair apposition by simply bundling by interrupted bands of silk, silver wire or any slowly absorbable material. Open joint capsules should be reunited, severed tendons spliced and attached to the periosteum or into the flap itself. We should not sacrifice even the proximal phalanx until we have attempted this, and you will often be surprised at the amount of function restored, and if not, there is plenty of time to amputate later through healthy tissue that will give us but little trouble and but short disability.

If in spite of all we can do infection follows, particularly that dreaded phlegmon so prone to attack the hand, continuous submersion and free drainage is our only hope; and disregarding our anatomy, especially that of the palmar arches, we should make our incisions full, free and frequent.

I offer an apology, gentlemen, for offering a paper containing nothing new, and having, perhaps, not even the merit of brevity; but we are an association of local surgeons, the actual workers in the surgical department of our great railway, and it is to you, in behalf of the mangled hand, that I appeal for delay. Unfortunately, perhaps, all things considered, the vast majority of our accidents do not occur before the doors of our great hospitals, presided over by the accomplished chief surgeon or by those princes of railway surgeons, members of the American Academy of Railway Surgeons; and while with them we all agree,

that: "The higher the order of railway surgery the greater the protection to the employe, the passenger and the company," we want this high order of railway surgery to extend all along the line and wherever the red lights flash, and wherever that lowly but ever conscientious worker, the local railway surgeon, is to be found.

CONSERVATIVE SURGERY OF THE HAND.*

By W. B. Johnson, M. D., Savanna, Ill.

It is not my intention to call to notice anything essentially new, nor to make any pretentious claims. It is my intention, however, to renew suggestions already made bearing on the subject of conservative surgery of the hand, that most useful member, every part of which is of inestimable value to the possessor. The first point I wish to make is that in my opinion all injuries occurring between the cars or on the track are necessarily septic and in these cases the railway surgeon cannot practice aseptic surgery. Soap and water, the saline solution, sterilized water, etc., will possibly be all sufficient in some clean cases; but where we have a contused, lacerated wound, with the parts begrimed with grease and dirt and cinders ground into its innermost recesses, to insure against suppuration and secure primary union we must not only scrub thoroughly with green soap and water but should use carbolic acid and bichloride freely. Consider the paramount importance of absolute asepsis in cases of conservative surgery where doubtful tissues finally diappoint us by sloughing.

If asepsis is complete a line of demarkation will form and the slough be exfoliated without any injury to the general wound; while if incomplete and a pus infection is mixed with the decomposition of the necrotic tissue the whole wound is in a most deplorable condition. Along those lines of sutures, where, at our first dressing, we saw such kindly primary union, at our second or third dressing we find a profuse suppurative discharge, with gaping of the wound and a subsequent pulling out of sutures—a condition remedied only by a complicated system of adhesive straps, giving a long, tedious recovery, or necessitating a secondary operation.

I wish to speak particularly to-day of the case of a freight conductor, 33 years of age, who was injured in the Savanna yard April 23, 1896, while making a coupling. He had a severe contusion and laceration of the left hand through the metacarpus. The skin and subcutaneous tissues were torn from almost the entire area of the back of the hand, completely baring all of the extensor tendons. The wound in the integument reaching from the wrist joint down between the ring and middle fingers, was draged open the whole width of the hand. But the part which sustained the greatest crushing force was that between the thumb and the metacarpal bone of the middle finger. The thumb happily escaped much severe bony lesion by being dislocated outward from the carpo-metacarpal joint. The metacarpal bone of the index finger was literally crushed to fragments, while the skin, which was lacerated transversely from the longitudinal tear, down onto the index finger, was pushed toward its extremity as a cover would be pushed off an umbrella, if you will allow the comparison. A drop wrist in the opposite arm, from a former injury, very much impaired the function of that hand and extra effort was made to get as good a recovery as possible. After thorough preparation the index finger was amputated and its metacarpal removed; the thumb was then crowded over into the space made vacant by the removal of the metacarpal, reducing the area necessary to cover with flaps. Notwithstanding this fact, however, it was found that great tension was required to draw the skin surfaces into apposition. To reduce tension as much as possible the hand was dressed in a position of hyper-extension at the wrist. A large aseptic dressing was applied, moistened with a warm borolyptol solution and the patient sent to his home in Dubuque. At this time I really expected a great deal of sloughing of those contused flaps. Dr. Staples of Dubuque dressed the hand soon and, as everything was doing well, put on a dry dressing. Dr. Staples I think, dressed about once a week. There was no discharge but the margins of the flaps were necrotic. I next saw the hand two weeks after the injury; the sutures still remained and

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were not disturbed; the wound was entirely dry and I redressed with boric acid powder.

Now comes what I consider the most peculiar feature of this case; from the first with that line of sloughing along the wound there was no pain, no suppuration, nor any untoward symptom. The necrosed area seemed to undergo a sort of mummification and shrunk up with the sutures, still remaining from April 23 until June 8, over seven weeks, when the man come down to Savanna, and I saw that the dead tissue could be easily removed. This I did, revealing a nicely granulating surface beneath, which I dusted with protonuclein (special powder) and it healed rapidly. The man went to his work August 1 with a hand which will be very serviceable and in which, with the exception of one small point, there are no adherent tendons.

This case, I think, shows exclusively what can be done with integument, even when every indication is toward extensive sloughing. I believe that when an endeavor is made to save a portion of a member we should not remove anything which has the minutest chance of regaining its vitality, but should put on moist warm dressings and give it an opportunity to take advantage of that chance; and further, when amputation is necessary about the fingers or hand make such amputation without the slightest regard for methods if need be to secure for the patient the best result.

How often scraggling pieces of tissue that have escaped or withstood the severest part of the traumatism, and that the surgeon is tempted to trim off with the scissors, can be folded over, adjusted one with the other and make an astonishingly good flap to cover the end of a protruding bone, thereby lessening the patient's loss. I remember a case in which I amputated the thumb and index finger through their metacarpals and made an attempt to save the middle finger, but failed and was obliged to amputate on the second day, but that delay was invaluable as it not only showed the certain loss of the middle finger but enabled me to save the integument of the outer side of the finger from base to tip, which I lapped over to take the place of a large portion of the flaps covering the thumb and index stumps, lost by unexpected sloughing. The patient after recovery having sensation as in the tip of middle finger when stimulation was made over the thumb stump. While I advise not to trim off scraggling pieces of flaps it is most essential to trim the edges of all retained integument thoroughly, thereby converting a contused and lacerated wound as much as possible into one of an incised nature.

Skin grafting, I think, may be employed much more commonly than at present and oftentimes the pedunculated skin-flap from the chest or other accessible part will render a hand useful which, without it, would be hopelessly crippled by cicatricial contraction. I think that if we cannot save a hand we should try to retain any part of it; even if it is no more than a portion of a finger on the end of a stump it is worth a great deal to its possessor. Everything considered, I believe that, in the hand, where every inch is so valuable, we should always take advantage of the doubt, if it exists, and a reasonable amount of waiting and moist dressings will often bring forth wonderfully satisfactory results, although requiring more work and care on the part of the attendant.

DISCUSSION OF THE PAPERS OF DOCTORS JOHNSON AND CROWELL.

Dr. Marks: Both papers, I think, are very important and very interesting. I am very much pleased when I can save a hand. A case came under my observation about ten years since, where a little boy was playing with a lawn mower, and had his finger cut off. The mother went out and picked it up. By the time I got there, of course it was pretty cold. I put it in warm water and put it on as soon as possible and to my surprise it held. That shows something of what we can do with the hand. I am glad to see that conservative surgery is a thing that is receiving attention at the present time. As has been stated, every particle, every eighth of an inch that can be saved, is of great benefit to the possessor.

Dr. Garlock: Conservative surgery is one of the finest things, possibly, that railway surgeons can adopt, but there is such a thing as carrying conservative surgery too far; that is, great judgment is necessary in knowing what conservative surgery consists in. A couple of years since I had a case of a brakeman in the yard at Racine who, instead of setting the brake, attempted to stop the car by pulling a

pin and throwing it under the car, but he made a misstep and fell, and instead of throwing the pin under the wheel his right hand went under the wheel and was taken off. The only thing that could be saved was the thumb; enough of the tissues being retained from the palm to turn over the stump. I think this case was turned over to Dr. Marks and he may know how it came out. The patient made a good recovery, but a few weeks afterwards he began to have pain in his hand at the point of the injury; it seems some of the nerves had remained in the cicatrix; we had saved the thumb and the thumb was worth a good deal, but finally it was decided that the hand must come off above the wrist and it has been taken off. There is where the surgery was a little too conservative. It would have been better to take the hand off at the time.

Dr. Marks: Couldn't the nerve have been taken out without taking off the hand?

Dr. Garlock: I will say the wound had been opened and an attempt made to take out a portion of the nerve, but it was not a success and he had commenced suit against the company for damages to his hand, and his attorney advised him to get some other surgeon besides the railway surgeon to examine the case, because he wanted to have a witness on his behalf; consequently the case went out of my hands.

Dr. Bell: I don't understand from what Dr. Garlock says, why the hand was taken off. Was it to relieve the patient of pain?

Dr. Garlock: Yes.

Dr. Sugg: There is one point brought out by Dr. Johnson; the condition we find the hands and fingers of machinists and railway employes in when they come to us, covered with dirt and grease, and the difficulty in cleaning them. Some years ago I was present at a lime kiln where crude petroleum oil was used. There was a tank of it there. I noticed that the men were continuously washing in the crude oil; when they got a bruised hand they washed that in the oil, or a dirty hand, and they came out clean, and it struck me it would be a good thing to put on hands when they came to us dirty and crushed and for a number of years I have cleaned such hands with crude petroleum oil, and have found it works excellently well.

Dr. McCoy: I had a case about two years ago of a farmer injured in a threshing machine, which is very much the same as Dr. Garlock's case. I told him we might have to remove the hand. He said no, he would rather bear the pain. When I saw him a year ago the pain had entirely subsided and he has a good hand except the loss of one finger. The pain entirely disappeared under local treatment. I told him to keep it comfortably warm.

There is another thing I would like to call attention to that perhaps some may be interested in; that is in regard to skin grafting. I noticed some years ago an article by Dr. Manly of New York, in which he advises the use of parings of corns for skin grafting. Some times, in the case of farmers, the horny-handed sons of toil, we could get considerable skin in that way.

Dr. Plumbe: I want to speak in regard tc this question of dressing, dry dressing and wet dressing. If I had an injury that was superficial and that I was certain was aseptic and in which there was no danger of any pocket, and in which I wouldn't probably have to make any incisions or remove any blood clots afterward, and where there would certainly be no oozing, I would use a dry dressing; otherwise I would use a moist dressing. I would prefer in that case a saturated solution of boric acid for a primary dressing and after the primary dressing an irrigation of a weak solution of bichloride of mercury. I have seen one or two cases of local dermatitis, following the use of a solution of bichloride of mercury; in one case it followed the use of a solution of not more than one in two or three thousand. There is a difference in patients. For a wound which was septic and severely lacerated I would use a hot saturated solution of boric acid, injected, if necessary, with a syringe, into every cavity I could find and then apply sterilized gauze, kept constantly wet with the same solution. In some cases I might use irrigation.

In regard to conservative surgery. Thirty years ago many of the injuries we treat successfully now would have been necessarily fatal. During the war many men died from amputation; nowadays there would be no excuse and a surgeon would be liable for malpractice if he lost such cases. Therefore we can now save hands and fingers and other por-

tions of the body, which years ago we would not have attempted to save. Now amputation should be the exception and not the rule; a hand or finger or limb must be severely mashed before I would amputate it.

In regard to alcohol. The use of alcohol became, some twenty-five years ago, in many of the hospitals in the East, quite a fad for almost all kinds of wounds. I have seen an amputated arm placed in a trough filled with diluted alcohol and water, I don't know how strong it was, and kept there for the purpose of a dressing, and surgeons used it for irrigation, by applying a cloth or sponge kept constantly wet with alcohol. It seemed to have a very good effect. As we know very well, alcohol is an antiseptic. I use alcohol in an operation, strong alcohol, as an instrument bath instead of carbolic acid. I formerly used carbolic acid but sometimes from putting my hands into it many times my fingers got so numb that they were practically useless. I don't know as it makes any difference, if we want to use continuous irrigation, whether we use salt and water or whether we use boric acid or what we use, as long as we use sterilized water; there is the point; it is not so much the antiseptic we use for the purpose of irrigation as to know that the liquid we use is not septic.

Dr. McDill: I would not like to see the discussion closed without reference to a material I have used during my hospital experience and since for ten years. I would like to call attention to a solution of acetate of aluminum as a very efficient microbe killer, a substance which has great penetrating power, and, at the same time, is neither locally nor constitutionally toxic; it is also cheap.

Dr. T. C. Clark: There is one class of wounds not mentioned here which is most important in the hand or foot; that is, punctured wounds. Upon the proper treatment of these wounds frequently depends the welfare of the patient. I remember reading, soon after the close of the World's Fair, a resumé by the surgeon in chief there, of the punctured wounds of the foot treated by the medical corps. I think there were six hundred cases of punctured wounds of the foot, mostly from stepping on nails. The treatment of those cases was that of freely opening the wound, washing it perfectly clean and then introducing a probe with cotton on the end, thoroughly saturated with carbolic acid, washing out the wound and dressing it with a dry dressing. This is the practice I have followed before, and since reading that report. The necessity was impressed upon me by a case I had in which a laboring man stepped upon a nail. I was called to see him two weeks after this occurred. The wound had entirely healed but the man was in a state of spasms; the muscles of the neck were rigid and the throat contracted; I removed him to the hospital, but he died that night. That was a case of tetanus due to a nail wound. Perhaps we have more wounds of that character than any other wounds of the hand or foot. The essential point of the treatment is to see that they are thoroughly opened and cleaned and it is a good plan to syringe them out or swab them out with a 95 per cent. solution of carbolic acid.

I had a case recently of a little girl who stepped on a garden rake; one tooth pushed clear through the foot and another nearly through; I opened the wound and made an opening clear through the one, only partially through and washed it out thoroughly; I used alcohol in that case and swabbed the wound out and applied a dry dressing made for the purpose. They are simple wounds, as far as the damage is concerned, but are liable to be extremely disastrous.

Dr. Binnie: I want to indorse what the gentleman said about punctured wounds of the foot. It has been my experience to see two cases of tetanus resulting from such wounds and since then I have had several such wounds to treat. I take cocaine first and inject it into the wound until I destroy sensibility, and then I incise it. I don't let the patient go away until he is free from pain and the nervous symptoms have subsided. I had two cases last summer caused by rakes and two by shingle nails. I have come to the conclusion that it makes a good deal of difference in what part of the foot these injuries occur. I think about the center of the ball is the worst, the place just behind the toes. I think they are about as dangerous wounds as we can get. I would advise cleaning them out thoroughly. In regard to protonuclein, I have used that some in bad lacerations and have had very good results from it. There is another class

of wounds that we sometimes get and that is burns. It has become a sort of fad with me —may be there is nothing in it—I use a little belladonna applied in liquid form to prevent a hardened cicatrix; I think it prevents drying and puckering to a very great extent.

Dr. Whitford: In regard to punctured wounds, I have observed we hardly find any symptoms of tetanus where the periosteum is not destroyed. Any punctured wound that reaches the periosteum is liable to cause tetanus. Where it does not it is no more liable than any other open wound. In regard to the treatment, I believe I recommended something last year that a good many of the surgeons present agreed was good, to apply spirits of turpentine, pure; I will guarantee you will not get tetanus from a punctured wound, whether it reaches the periosteum or not, if it is applied thoroughly and promptly. One thing I notice has not been mentioned, that is, treatment for painful lacerations, painful wounds, where there is intense pain following. I have a preparation which I have used which I would like to call attention to: One ounce of carbolic acid into an ounce of raw linseed oil, combined with whiting, used as a dressing; five minutes afterward the pain will generally subside.

Dr. Binnie: In regard to tetanus, I attended a lady two years ago who was in a terribly nervous condition and I was very much afraid of tetanus from a puncture by a shingle nail, which I made sure did not go near the periosteum. I think she would have had tetanus if she had been left alone. I doubt very much if it is necessary that the periosteum should be injured to get tetanus. I have no doubt that we would be more liable to get it in an injury of that kind, but I think it must be settled that we can get tetanus without going anywhere near the periosteum.

Dr. Bouffleur: I happened to see the patient that Dr. Johnson reported, and for that reason I was anxious that he should present the case at this meeting, because it certainly proved the wisdom of his course in treating it. It was a remarkably useful member that he saved for that conductor; whether he always remains a conductor or not he will have a hand, that is, for all practical purposes, just as good as ever. There is no doubt but what we have a good many of just such cases. I had one, I hope to show you a photograph of. It was one of considerable interest. The whole hand was taken except the thumb, with the second metacarpal bone left in position without anything to cover it. Instead of amputating it at the wrist we left the major part of the stump open, and transferred a small piece of skin over the end of the bone, and while the prospects for a favorable outcome were certainly not good, yet by careful nursing and subsequent skin-grafting we succeeded in saving the thumb, and with the metacarpal bone and the index finger that individual has since performed the duties of a switchman. Although it took, I think, about three months to get it in proper shape, at the same time we succeeded in saving the hand, which he has since used to earn his living as a switchman.

In regard to the various antiseptics, there is just one caution I wish to give in regard to acetate of aluminum. I have used it a great deal and was somewhat astonished to find out that the average preparation which we get in a drug store is not soluble. I dare say there is not one preparation in ten in a drug store that is soluble. Furthermore, if we want to use acetate of aluminum we had better make a cold solution instead of hot. Acetate of aluminum is one of the substances not soluble in hot water. I like acetate of aluminum and like the effects of it, but from the fact that the preparations which we buy are so uncertain, and also from the fact that we cannot make a warm solution of it, I have personally discarded the use of that substance. Each antiseptic, of course, has its advantages; some of them have positive disadvantages; personally I like the effect of bichloride. There are, I dare say, some gentlemen present who are personally very much opposed to the use of carbolic acid; bichloride is a decided poison and irritant to me, so that by the immersion of my hand in bichloride for an operation, perhaps extending over a half of three-quarters of an hour, I am sure to have dermatitis following the next day. I have met with a number of doctors who are affected the same way by carbolic acid.

As to the advisability of primary amputations, I believe I have expressed myself on a former occasion somewhat fully on this point. Personally I very rarely perform a primary amputation. I think that our present knowl-

edge justifies the general rule that we should not sacrifice anything that can be saved in the way of hands or feet, or, for that matter, any part of the body that we can make useful. The point that Dr. Garlock made that occasionally we carry things too far I believe is a good one. It is better not to save a limb or finger than to save it and have it useless, and perhaps in the way. I knew of a case of a middle finger which was injured to the extent of the loss of the flexor tendons. The finger sticks out straight, no matter what the individual does, and is a positive detriment to him. It would have been better to have amputated it, although the finger itself was not much injured. So the rule, I think, is justified at the present time not to amputate any tissues which can be made profitable or that can be made useful. We have all been taught by our teachers and text-books very nice ways and methods of making amputations, but they lose sight very frequently of the fact that we do not have the choice of how we shall shape our flaps or the way we shall make our amputations. That is usually decided before we get to the patient. Therefore, I think it a better rule than to follow the ones given in our text-books, to shape our flaps so that the cicatrices will be out of the way of irritation. In that way we will obviate a good many of those uncomfortable sequels of amputation. I was taught that we should never make an amputation with a cicatrix on the palmar surface of the finger, but we all know, as railway surgeons, that to save as much as possible in length, it is necessary to bring the seam on the end of the finger, or at least the palmar surface. To save in length you must bring the cicatrix around on the anterior surface.

To avoid sensitive points I do not anæsthetize patients for the amputation of fingers, not even with whisky, for the reason that if the patient is not anæsthetized you can readily locate them by the use of the fingers and remove them. Very frequently if you do not remove them you will have a tender cicatrix, while if you do you will have a comfortable cicatrix. I think in the last two years I have had only one tender cicatrix, and that in a case where I did it in about ten minutes, when I was in haste to get a train. The general rule that I have mentioned in regard to the amputation of tissues is, I believe, a thoroughly justifiable one. If I am mistaken in that, I would like to have some one correct me or enlighten me on the subject.

The Persistence of Exuberant Granulations Due to the Remnants of Ligatures.

Dr. V. H. Munson of Putnam, Conn., reports the following interesting case in a recent number of the New York Medical Journal: F. A. W., a stalwart man of thirty-five years, was drawn into a belt at a sawmill about three months ago. The belt burned its way through all the muscular and vascular tissues of the popliteal space and had nicely polished the bone ere he could be rescued. As a result, circulation from the articular arteries having been destroyed by a previous accident, gangrene set in on the second day following and the man was removed to the Day Kimball Hospital. The leg was freely laid open by means of several deep incisions, and thoroughly irrigated with a 1 per cent solution of creolin. This was not done with any hope of saving the limb, as there was no pulsation whatever below the knee, but by means of drainage to reduce the temperature, which was then 103 degrees F. Soon after his temperature fell to 100 degrees and Dr. Holbrook was called in consultation. As amputation was advised, Dr. Overlock and I removed the limb at the upper third of the femur, on October 3, 1896, by means of the circular flap operation. The large arteries were tied with very large sterilized, braided silk ligatures. The drainage tubes were removed in five days and the stump healed very well with the exception of a small polypous growth of "proud flesh." This was cauterized frequently during the ensuing month, but still persisted in breaking out again. Alum, carbolic acid, nitric acid, lunar cautic and the thermo-cautery were applied, but nothing seemed to have any permanent effect. Six weeks from the time of operation another similar growth appeared on the opposite (internal) side of the stump, which pursued the same obstinate course as the other. Finally, on January 1, I determined to cut off these superfluous growths. Upon my doing so, a slight quantity of pus came from one, and, seeing something white and glistening, I caught hold of it with a strong forceps and removed one of the before-mentioned silk ligatures. Upon searching the other wound, I caught hold of another similar piece of silk and removed it. Then, irrigating with 1 to 40 carbolic acid solution, I applied a little aristol and dressed with sterilized gauze. On January 10 the stump had entirely healed.

THE MISSOURI PACIFIC HOSPITAL AT KANSAS CITY.

We gave last issue a description, with illustrations, of the St. Louis hospital of the Missouri Pacific Railway. That institution is

THE MISSOURI PACIFIC HOSPITAL AT KANSAS CITY.

the main hospital of the Missouri Pacific system, with, as our former article said, subordinate hospitals at Kansas City and Little Rock. The illustrations accompanying this give an idea of the hospital at Kansas City, which is under the charge of Dr. W. P. King, with three assistants. It is centrally located in the city, is built of brick and stone and has apartments for the staff and corps of attendants.

Like the St. Louis hospital, it has an ambulance service and a large library and is well equipped with surgical appliances.

Its prescription department supplies the west and southwest portion of the railway system, and while not dispensing so many prescriptions as the St. Louis hospital, it fills many thousands annually. Two of its four wards are devoted to surgical cases, one to fever, and the fourth to the chronic surgical cases.

In both hospitals books are supplied to those who wish to read. Musical instruments are in the parlors, and every effort is made to serve the mind as well as the body. The Little Rock hospital is an emergency hospital. The injured are taken there for first treatment, to remain until they may be removed to St. Louis.

RESIDENT STAFF OF MISSOURI PACIFIC HOSPITAL AT KANSAS CITY.

Faith Cure Wins.

A recent court decision in Pennsylvania directs attention to the defect in some of its medical practice acts in dealing with the faith cure. A faith curist arrested at Bellefonte, at the instigation of the county medical society for a violation of the medical practice act, set up a defense that there is no law requiring the registration of those practicing faith cure, the medical practice act having relation only to physicians who practice medicine and surgery. The claim was made that the faith cure is purely a form of religious worship, and according to the constitution of the state and of the United States no one has any right to hinder or interfere with such. The justice acknowledged that he could not bind the "doctor" over to a higher court.—Virginia Medical Journal.

Extracts and Abstracts.

A New Dressing for Fracture of the Clavicle.

Dr. M. L. Harris, in the Chicago Medical Recorder for September, 1896, describes a new dressing for fracture of the clavicle. A piece of ordinary roller bandage five or six feet in

INTERIOR OF A WARD, MISSOURI PACIFIC HOSPITAL.

length is laid over one shoulder like a suspender. The chest is then encircled by a roller three or four inches in width by eight or ten yards in length; this should be quite firmly applied, so it will not slip. A piece of muslin about three yards in length, and in width equal to the length of the arm from the axillary fold to the bend of the elbow, is folded in the middle, and, beginning at the ends, torn down the center to within about two inches of the fold. This makes a four-tailed bandage of the required width folded in the middle. The arm is passed through the fold so that the untorn portion comes opposite the outer surface of the humerus. All four tails pass behind and around the body in the same direction. By drawing on these the arm is carried backward and inward, the scapula upward and inward toward the vertebral column, while the tip of the shoulder and consequently the outer fragment of the clavicle are carried upward, outward and backward into place. The extent to which the arm should be drawn backward and inward depends entirely on the amount of displacement and deformity to be overcome. The object of tearing the piece into four tails is now readily seen. When the arm is drawn backward in this manner the anterior and outer surfaces are obliquely placed, so that were the bandage in one piece when drawn taut it would be making pressure at its upper edge, while its lower edge would be very loose. In passing the four tails around the body, they cross so that the two upper become the lower and the two lower the upper. In this way the entire width of the bandage is tight, so that the pressure is uniformly distributed throughout the whole length of the arm. The pressure coming almost entirely on the outer side of the arm, no matter how firmly it is drawn it cannot materially interfere with the circulation. The four tails are continued around the body as far as they will go, and pinned to the first roller.

A roller is now firmly applied around the body and arm together, and two large safety-pins are placed just in front of the arm, passing through all layers of bandage, including the first body-roller. The loose ends of the first strip, or suspender, laid over the shoulder, are now passed over the opposite shoulder and pinned or tied, when the dressing is complete. It is not the intention that the suspender should offer pressure at the seat of the fracture, and should it do so the ends should be carried back over the same or well shoulder and tied. The sole object of the suspender is to prevent the dressing from slipping downward, owing to the tapering of the chest and body toward the waist. The object of the first roller about the body is simply to supply something to pin to; consequently, if it be insufficient in length or loosely applied, it will slip, thus allowing the entire dressing to become loose and inefficient. When convenient, this part of the dressing may be advantageously replaced by a piece of adhesive plaster four to six inches in width and long enough to encircle the chest. Standing in front, it should be applied from the patient's left to right in fracture of the left clavicle, and from right to left in right-sided cases. The posterior end of the plaster should be folded upon itself for about two inches, so as to leave a free end which will not adhere. This free end should come about opposite the anterior

PHARMACY OF MISSOURI PACIFIC HOSPITAL.

border of the axilla. The four-tailed bandage is now applied, and the ends pinned to the free end of the adhesive plaster. This effectually prevents slipping.

As will be seen, the forearm is left entirely free. It may be carried in a sling or left hang-

ing, as the comfort of the patient dictates. Motion at the elbow cannot be communicated to the clavicle or shoulder, for the shoulder in this dressing is absolutely fixed. Should the forearm show any tendency to swell, at it may occasionally if the four-tailed piece is a little too wide, so as to encroach on the superficial veins at the bend of the elbow, this may readily be prevented by the application of a light roller.

In view of the large number of dressings and appliances which have been devised for this very common fracture, a new one must needs possess some advantages in order to secure for it special consideration. The dressing is simple and easy of application; it absolutely fixes the arm and shoulder in the position which most perfectly reduces the deformity in the large majority of fractures of this bone; and it is comfortable. Dr. Harris has never had a patient express the slightest uneasiness while wearing it, which is in marked contrast to the discomfort of many dressings, some of which are almost unbearable. The seat of the fracture is at all times exposed to view, where it can be inspected at will without displacing or removing the dressings. The forearm and hands are perfectly free and can be used at the patient's pleasure, thus avoiding disuse atrophy and stiff joints from confinement.—Medicine.

Safeguards in Chloroform Administration.

W. J. J. Arnold, B. A., M. B., surgeon to the Cottage Hospital, Aberdare, writes as follows to the British Medical Journal: The capital fault in the ordinary method of giving chloroform is the absolute want of control on the part of the administrator over the quantity that the patient may inhale with each inspiration. It is common to find a great variation in the depth of the respirations taken by the patient during the time that he is going under, and whilst respiration is more or less within his own control, a number of very shallow inspirations being followed quickly by several very deep inspirations, whereby he may inhale a quantity sufficient to paralyze his respiratory center. I believe that this is the explanation of most of the deaths which occur before the patient has ever been properly under the anæsthetic. The same danger arises at another stage in the administration, namely, when the patient is threatening to return to consciousnes after he has been anæsthetized. The towel saturated with vapor is quickly reapplied, and the patient, with a few deep, gasping inspirations, inhales a quantity of chloroform for which his respiratory centers are quite unprepared, and cessation of function is too often the consequence. This danger can be entirely obviated by the intelligent use of an inhaler which accurately regulates the quantity supplied to the patient during any inspiration. I say the "intelligent use," for the same danger is present if chloroform be recklessly pumped through an inhaler as when it is given unmeasured on a towel, though to a less extent.

The secret of its safe administration lies in attention to two points:

1. A very gradual increase in the quantity supplied to the patient whilst putting him under. If this be carefully graduated so that the quantity of vapor reaches the maximum by almost imperceptible degrees, the two disagreeable and dangerous symptoms (struggling and vomiting) are almost invariably done away with. This is attained by attending to the amount of compression given to the bulb. At the start, during several respirations, only the slightest compression is used. A slightly deeper compression of the bulb is made for several ensuing respirations, and so on until a full compression is reached, which is kept up till the reflexes are abolished.

2. Once the patient is under, the amount must be reduced to the minimum, or something approaching it, and by continuing to supply him constantly with this minimum dose complete anæsthesia may be maintained continuously for hours with perfect safety.

The regulating inhaler made by Krohne and Sesemann meets every requirement. I may remark, however, that the feather which is supposed to guide the administrator as to the continuance of respiration is an unnecessary part of the apparatus, as the anæsthetist should have eyes for nothing but the movements of the chest wall itself. I have used this apparatus over 150 times during the past two years, and on no single occasion has the condition of the patient given rise to any alarm.

There is a great difference in the quantity of chloroform used by this method and that required when the ordinary means of administration on a towel is employed. With the inhaler the amount is from one-half to one-quarter that required when other methods are used. There is an almost uniform absence of the unpleasant symptoms of struggling and vomiting. [From a table with which Mr. Arnold has furnished us it appears that of twenty consecutive cases struggling occurred in one only—a confirmed alcoholic—and vomiting in one.] The time occupied in putting the patient under varied from a minute or two up to ten, fifteen or twenty minutes.

The struggling in alcoholics is not that of asphyxia, but appears to be due to an action on the higher centers in some way altered by continual soaking in alcohol, and so rendered peculiarly susceptible to the excitant properties of chloroform which normally should not be evident. It betrays the fact of alcoholism at some period of the patient's history, and is almost pathognomonic.

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REVISION OF THE CONSTITUTION.

At the annual convention there will come up for discussion the report of the committee appointed to recommend a revised constitution for the association. We herewith present the report of the committee, together with the draft of the proposed constitution in full, so that members may read it before the convention and thereby save discussion. The following is the report:

To the National Association of Railway Surgeons.

Your special committee appointed at the last annual meeting to revise the constitution and by-laws, respectfully, report that taking the old constitution as a basis they have made such alterations or changes as seemed to them proper, and submit the following for your consideration.

W. A. Ward, M. D.,
Chairman of Committee.

CONSTITUTION OF THE NATIONAL ASSOCIATION OF RAILWAY SURGEONS.

ARTICLE I.

Section 1. The name of this Association shall be, "The National Association of Railway Surgeons."

Sec. 2. The object of this Association shall be to promote acquaintance and fraternal relations among railway surgeons, to secure interchange of ideas and adoption of the best methods of the development and improvement of railway surgery, and to establish it as a special branch of the chirurgical art.

ARTICLE II.

Section 1. The members of the Association shall consist of two classes, active and honorary.

Sec. 2. The active members shall be surgeons of railway companies at the time of their admission to membership, provided, however, that when a surgeon is once a member, his retirement from the service of the company shall not forfeit his membership.

Sec. 3. The honorary members shall comprise such persons, not necessarily railway surgeons, as may from time to time be elected, and accorded the usual privileges of such membership.

Sec. 4. All propositions for membership shall be made in open session, referred to the executive board, and on their report, elected by a two-thirds vote of the members present, provided, however, no report shall be made or election held on the same day of the session that the name is proposed.

ARTICLE III.

Section 1. The officers of this Association shall consist of a president, five vice-presidents, a secretary and an assistant secretary, a treasurer, also an executive board of seven. All of whom shall be elected annually by ballot, to serve until their successors are elected, except the executive board, four of whom shall be elected in even years and three in odd years.

Sec. 2. Nominations may be made at the morning session of the second day, limited to five for each office, and for the executive board to twice the number to be elected.

Sec. 3. The election shall be in order at the opening of the afternoon session of the second day, a majority of all votes cast necessary to elect, and after the second ballot, if no election, all but the two receiving the highest number of votes shall be dropped, and the ballot confined to the two so designated. Of the executive board, a member receiving a majority shall be elected, until the number is full, the lowest being dropped on each ballot.

Sec. 4. All officers elected shall assume

their several stations before the close of the morning session of the third day.

ARTICLE IV.

Section 1. The president shall preside at all regular and special meetings and perform all the other duties that custom and parliamentary usage may require, and deliver an address at the annual meeting over which he presides.

Sec. 2. In the absence of the president, the vice-presidents shall perform the duties of his office in the order of their election.

Sec. 3. The secretary shall keep a record of the proceedings of all meetings and draw all orders on the treasurer for the payment of bills, shall attend to all correspondence of the business of the Association, notify all members of meetings, and upon request of the chairman, give notice of meetings of committees during recess of the Association, and upon request of the president, shall issue such circular letters regarding the business of the Association as may be deemed desirable, and shall be ex-officio a member of the committee on arrangements.

Sec. 4. The treasurer shall have immediate charge of the funds and property of the Association, shall collect all dues, giving his receipt therefor, pay out money only on the order of the secretary, countersigned by the president, and shall give bond to the president to faithfully account for all funds coming into his possession belonging to this Association; the amount of the bond to be determined by the executive board. He shall also make a written statement to the president of the financial condition of the Association one month after the annual meeting. He shall communicate each year with all members who have not paid their annual dues and solicit payment of the same.

Sec. 5. The executive board shall fix the annual dues and membership fee, subject to the approval of the Association, and act as a committee on credentials, audit all accounts, and, in conjunction with the other officers of the Association, hold any necessary meetings in the interval between sessions deemed desirable and necessary in the interests of the Association, and such a conjoined action shall be deemed an action of the Association as a whole.

ARTICLE V.

Section 1. The standing committees shall consist of:

A Committee of Arrangements, five members.

A Committee of Transportation, three members.

A Committee of Necrology, three members.

A Committee of Publication.

The first three of whom shall be appointed and announced by the president before the adjournment of the final session.

Sec. 2. Special committees may be provided for at the pleasure of the Association.

Sec. 3. The committee on arrangements, a majority of whom shall be actual residents of the town or city in which the annual meeting next succeeding their appointment is held, provided there are that number of resident members, shall be required to provide suitable accommodations, including committee rooms, together with a list of hotels and rates per day; to receive and announce all essays, memoirs, and publish the title and name of the author of the same in the programme for the meeting, which programme shall be sent to all members entitled to seats in the annual meeting at least three weeks prior to the date of such meeting, and make any other necessary arrangements.

Sec. 4. It shall be the duty of the committee on transportation to ascertain the terms and conditions upon which the various railway lines will carry the members to and from the place of meeting, and to notify each member of the Association through the committee of arrangements, or otherwise, of the same at least one month prior to the annual meeting.

Sec. 5. The committee on necrology shall report annually brief biographical notes of the deceased members, and preserve statistical and other memorial records of the society.

Sec. 6. The committee on publication shall be composed of the president, secretary and treasurer, and shall have charge of preparing for the press such of the proceedings of the society as may be ordered to be published. And they shall have full discretionary powers to omit from the published transactions any part or whole of any paper that may be referred to it by the Association unless especially instructed to the contrary by the vote of the Association.

ARTICLE VI.

Section 1. The annual meeting of this Association shall be held between the first and last Mondays of May in each year, at the place agreed upon by the Association the preceding year, the particular date to be fixed by the executive board, and notice sent to each member of the Association not later than October of the current year. The session shall continue three days, or until all the business of the society is completed and a formal adjournment had.

Sec. 2. Special meetings may be had upon the call of the president of the Association, signed by the secretary, at the request of a majority of the officers, or the executive board, and the business to be considered must

be specified in the notification to be sent to each member of the Association.

ARTICLE VII.

The order of business at the annual meeting of this Association shall at all times be subject to the vote of two-thirds of all the members in attendance and until permanently altered, except when temporarily suspended. It shall be as follows:

1. Call to order.
2. Reading minutes of previous meeting.
3. Report of executive board.
4. Reports of committees and officers.
5. Nomination of officers, forenoon of second day.
6. Election of officers, afternoon of second day.
7. New business.
8. Report of cases.
9. Reading and discussing papers.
10. Unfinished business.
11. Adjournment.

ARTICLE VIII.

Section 1. The members present at any regular or special meeting shall constitute a quorum, and the majority vote decides all questions, unless otherwise provided for.

Sec. 2. The rules of conducting business shall in all cases, as far as they are applicable and not incompatible with the constitution of this Association, be those in Cushing's Manual.

ARTICLE IX.

Section 1. No report or other paper shall be entitled to publication in the journal for the year in which it shall be presented to the Association unless it is placed in the hands of the committee on publication on or before the first day of July.

ARTICLE X.

Section 1. Any active member who shall fail to pay his dues within four months after due, shall not be entitled to the journal, and if in default for two successive years shall be dropped from the roll of members, after having been notified by the treasurer of the pending forfeiture of his membership.

ARTICLE XI.

Section 1. Anyone appointed on a special committee who fails to report at the meeting next succeeding the one at which he is appointed, shall not be continued on such committee, or appointed on any other, unless a satisfactory excuse is offered.

ARTICLE XII.

Section 1. No amendments or alterations shall be made in any of these articles except at an annual meeting, when they shall be proposed in writing, laid over one day, and if not more than ten opposing votes, shall be adopted, otherwise they shall lie over until the next annual meeting, and then adopted only by two-thirds vote of all the members in attendance.

PROGRAMME FOR THE CONVENTION.

We present herewith the full programme of the papers to be presented to the convention, as arranged up to date:

1. "The Treatment of Functional Nervous Affections Due to Trauma," by Dr. John Punton, Kansas City, Mo. Discussion to be opened by Drs. H. M. Moyer and H. T. Patrick.

2. "Relief and Hospital Departments," by Dr. Frank H. Caldwell, Waycross, Ga. Discussion to be opened by Drs. W. B. Outten and George Chaffee.

3. "Relation of Railway Companies to State Boards of Health," by Dr. G. P. Conn, Concord, N. H.

4. "An Exhibition of Various Devices for the Determination of the Color Sense of Railway Employes," by Dr. C. W. Tangeman, Cincinnati, O. Discussion to be opened by Drs. J. A. Owen and J. F. Fulton.

5. "The Beneficial Influence Exercised by Railway Hospital Associations Upon the Morals of Employes," by Dr. George W. Hogeboom, Kansas City, Mo.

6. "Accidental or Railway Surgery," by Dr. C. B. Stemen, Fort Wayne, Ind.

7. "Observations Upon and Reasons for a More Complete Physical Examination of Railway Employes," by Dr. Henry F. Hoyt, St. Paul, Minn. Discussion to be opened by Drs. W. D. Middleton and J. W. Kaster.

8. "Treatment of Fracture of Humerus, Radius and Ulna, with Involvement of Wrist Joint," by Dr. H. L. Getz, Marshalltown, Ia.

9. "A Case of Intercondyloid Fracture of the Femur," by Dr. F. W. Schmidt, Riverdale, Ill. Discussion to be opened by Drs. A. I. Bouffleur and A. L. Cory.

10. "Dislocation of Hip Joint, with Report of Cases," by Dr. Solon Marks, Milwaukee, Wis. Discussion to be opened by Drs. J. N. Jackson and J. B. Hamilton.

11. "Traumatic Infections and Their Treatment," by Dr. W. T. Sarles, Sparta, Wis. Discussion to be opened by Drs. H. F. Hoyt and A. I. Bouffleur.

12. "The First Care of the Patient in Railway Traumatism," by Dr. A. L. Fulton, Kansas City, Mo.

12. "Plaster of Paris and the Difficulty of Applying it to Recent Fractures," by Dr. A. C. McClanahan, Red Lodge, Mont. Discussion to be opened by Drs. A. D. Bevan and Alton.

13. "Hernia as a Factor in Personal Dam-

age Suits," ten minutes, by Dr. John B. Hamilton, Chicago, Ill. Discussion to be opened by Drs. W. B. Outten and J. B. Murphy.

14. "Shock in Its Relation to Permanent Injury," by Dr. Thomas O. Summers, St. Louis, Mo. Discussion to be opened by Drs. Rhett Goode and Davis.

15. "The Treatment of Shock," by Dr. Jas. H. Letcher, Henderson, Ky.

16. "The Treatment of Burns," by Dr. E. W. Lee, Omaha, Neb.

17. "Brain Abscess," by Dr. W. A. McCandless, St. Louis, Mo.

18. "A Case in Practice," by Dr. A. L. Clark, Elgin, Ill.

19. "Medicine and Surgery and Their Votaries of To-day," by Dr. M. E. Alderson, Russellville, Ky.

20. "Cardinal Principles in Amputations," by Dr. A. I. Bouffleur, Chicago, Ill. Discussion to be opened by Drs. J. W. Kaster and J. B. Murphy.

21. "Wounds of the Neck," by Dr. F. W. Thomas, Marion, O.

22. "Vinegar in Surgery," by Dr. Evan O'Neill Kane, Kane, Pa. Discussion to be opened by Dr. W. S. Caldwell.

23. "Tetanus," by Dr. J. E. Tefft, Springfield, Mo.

24. "Report of a Case of Fæcal Fistula—Successful Use of the Murphy Button," by Dr. A. C. Wedge, Albert Lea, Minn. Discussion to be opened by Dr. J. B. Murphy.

25. "Problems and Principles," by Dr. Jabez N. Jackson, Kansas City, Mo.

26. "A Case of Osteo-Sarcoma from Railway Injury," by Dr. Rhett Goode, Mobile, Ala. Discussion to be opened by Drs. A. I. Bouffleur and L. Hektoen.

27. "Problems," by Dr. Thos. H. Briggs, Battle Creek, Mich.

A surgical clinic will be given by Dr. J. B. Murphy at Cook County Hospital, Wednesday afternoon.

There will undoubtedly be additions to the above, but as it stands it makes an excellent programme, which will furnish abundance of discussion for the full term of the convention.

ABOUT TRANSPORTATION.

In our last issue we published the circular letter which had been issued by the chairman of the Committee on Transportation, to railway managers, asking them to concede the usual courtesies in connection with transportation to the annual convention. The managers of over 50 companies have replied favorably, and answers are still coming in. The substance of the replies received is given below. Members should apply at once to the proper officer of their own company for all necessary transportation, and have such officers make the requests on connecting lines. No arrangement is made for any transportation for members of families or for anyone except the surgeons themselves. If any surgeon wishes such extra transportation, it is a matter for his personal arrangement with his company. The association does not recognize such requests, and it was specifically so stated to the managers in the circular quoted in our last issue. The replies received are as follows:

Ann Arbor Railroad.—I will be glad to comply with any request for transportation over this company's line, and will also make request for transportation for such of this company's surgeons as the surgeon-in-chief may desire to have attend this convention.—H. W. Ashley.

Atchison, Topeka & Santa Fé.—This company will transport over its own lines those of its own surgeons who may desire to attend the convention to be held in May next; we will also honor requests that may be made upon us by lines with which we have business connection, for surgeons of such lines attending the convention, when made by the proper officer. We do not, however, expect to make requests on our connecting lines for those of our local surgeons who may wish to attend.—E. P. Ripley.

Atlanta & West Point Railroad.—I will take pleasure in issuing transportation. Such transportation will be issued on the request of proper officers of foreign lines and will be requested from foreign lines in behalf of our own surgeons who may desire to attend the convention.—George C. Smith.

Atlantic & Danville.—I shall with pleasure comply with the requests of the circular, in case any such applications are presented.—Chas. O. Haines.

Baltimore & Ohio.—We will handle the matter in the way we have always done, and issue transportation for such of our own surgeons as we think it advisable to attend the convention, and also honor requests made to us by the proper officers of other railroads for their surgeons.—W. M. Greene.

Boston & Maine.—We will furnish transportation to surgeons attending the annual convention at Chicago on May 4-6 upon application from the proper officers of the roads with which they are connected, and will also request transportation for any of our surgeons who may apply.—T. W. MacKinnon.

Burlington, Cedar Rapids & Northern.—It is our intention to furnish our own surgeons with transportation over our own road when requests are made through our general agent. We will also be pleased to honor the requests

of the proper officials of other roads for the transportation of their surgeons over this road.—Robt. Williams.

Cape Fear & Yadkin Valley.—It will give me pleasure to furnish transportation for surgeons of other lines who wish to travel over our line going to and from the convention of the National Association of Railway Surgeons, to be held in Chicago in May.—J. W. Fry.

Chesapeake & Ohio.—We will, as usual, issue passes over our line to such of our surgeons as may desire to attend the convention, and will request passes over connecting lines to and from Chicago for them. Will also honor requests for passes from officers of other lines.—Geo. W. Stevens.

Chicago & Eastern Illinois.—As in former years, we will be glad to comply with any requests made on this company by the proper officials of other railroads.—M. J. Carpenter.

Chicago & North-Western.—It is the practice of this company to treat applications for transportation in favor of railway surgeons coming from the management of other companies in precisely the same manner as we treat similar applications for transportation for exclusive railway employes.—J. M. Whitman.

Chicago & West Michigan.—It will be my pleasure to extend the same courtesies as heretofore.—Chas. M. Heald.

Chicago Great Western.—This company will be glad to furnish transportation to its own surgeons and surgeons of other lines upon proper request from the general manager or president of those lines.—Samuel C. Stickney.

Chicago, Milwaukee & St. Paul.—We will be glad to provide transportation for our surgeons who desire to attend the convention, and will also issue passes, upon proper application, to surgeons of other railroad companies, who devote their time entirely to the service of the companies by which they are employed.—A. J. Earling.

Chicago, Peoria & St. Louis.—This company will take pleasure in honoring all requests for transportation by our own surgeons or those of other roads, wishing to attend the national convention at Chicago.—C. H. Bosworth.

Chicago, Rock Island & Pacific.—We will issue transportation over our own lines to such of our own surgeons as may desire to attend the convention, providing request therefor is made through our surgeon-in-chief, Dr. W. D. Middleton. I do not think it will be necessary for us to request transportation for any of them over any other lines of road, as they can all reach Chicago over our own line. Will be glad to honor requests of the proper officials of other roads for the transportation over our line of such of their staff of surgeons as they may desire to make such requests for.—W. H. Truesdale.

Chicago, St. Paul, Minneapolis & Omaha.—This company will furnish free transportation in accordance with your circular letter.—W. A. Scott.

Choctaw, Oklahoma & Gulf.—I am in receipt of your circular of the 13th inst. Will be glad to do anything in my power to assist in making the meeting a success.—Henry Wood.

Cincinnati, New Orleans & Texas Pacific.—We will, of course, issue transportation over our line for such of our surgeons as may desire to attend the convention.—S. M. Felton.

Cleveland, Cincinnati, Chicago & St. Louis.—We will issue transportation to surgeons of other railway companies upon request of the proper officials of the companies with which they are connected, and will also pass any of our own surgeons who may wish to attend.—M. E. Ingalls.

Delaware, Lackawanna & Western.—We will honor requests for transportation from the proper officers of other railroads, as requested therein.—W. F. Hallstead.

The Denver & Rio Grande.—We will carry the delegates to the annual convention of your association in accordance with the terms expressed in your circular, viz., when the transportation is requested by the proper officer of the lines with which the respective delegates may be employed.—E. T. Jeffery.

Erie.—We shall be very glad to issue transportation over our lines to such of our surgeons as may wish to attend this convention, requests being made through the proper channel. We cannot, however, grant free transportation to surgeons of other lines, as it is not customary with us to request these favors of foreign lines for our surgeons, and I hardly feel it consistent to extend to other roads courtesies which we deny our own people. We have uniformly declined to do so.—W. F. Merrill.

Evansville & Terre Haute.—This company will be pleased to issue transportation to surgeons employed by railroad companies when proper requests are received from the chief operating officer of the respective roads with which surgeons may be employed.—H. C. Barlow.

Fitchburg.—We will comply with your requests with pleasure.—W. D. Ewing.

Florida Central & Peninsular.—This company will be pleased to honor requests for transportation made by the proper officers of other lines for surgeons who may be in their employ. Respecting your request No. 2, would state that I am willing to request transportation for the surgeons of this company, provided connecting lines will grant the same. Heretofore some of the roads, principally the L. & N. R. R., have declined to issue transportation to surgeons, and I would be glad to have you advise me as soon as you hear from

that company, as to whether that policy will be adhered to this year.—D. E. Maxwell.

Georgia & Alabama.—I will be glad to furnish and request transportation as described in your letter.—Cecil Gabbett.

Grand Trunk.—It will afford us pleasure to extend to the members of the association the same courtesies as have been extended in former years, as referred to in your circular.—Charles M. Hays.

Indiana, Decatur & Western.—We will be pleased to comply with the suggestion contained therein.—R. B. F. Peirce.

Iowa Central.—I will be pleased to request transportation for such of our surgeons who wish to attend this convention, and will also honor requests from other lines in behalf of their surgeons when such requests are made by the proper officer of the company.—L. M. Martin.

Keokuk & Western.—I shall be glad to comply with the request as outlined in the circular for transportation for surgeons.—A. C. Goodrich.

Lake Erie & Western.—We will comply with your request as to transportation.—D. S. Hill.

Lehigh Valley.—Our company will gladly furnish transportation for regularly appointed surgeon or surgeons, not exceeding two from any line upon proper request being made by some general officer of their company. In the case of surgeons employed solely by the railroad companies, those who have no other practice, we would issue transportation without limit as to number upon request being properly made.—R. H. Wilbur.

Louisville, Evansville & St. Louis.—We will be pleased to grant transportation over this line to such surgeons as are regularly engaged with railways, when requested to do so by the operative officers of such line.—G. T. Jarvis.

Memphis & Charleston.—We will be pleased to issue passes over our line to any of our physicians who wish to attend the convention. We will also request passes over connecting lines for our own surgeons if such roads signify their willingness to honor these requests, and we will be pleased to honor requests from other roads for transportation over our line for such surgeons as are accredited delegates to the convention, when such requests are made by the proper officers.—R. B. Pegram.

Mexican Central.—We will be glad to issue transportation in accordance with the rules of the St. Louis Association.—H. R. Nickerson.

Missouri, Kansas & Texas.—The local surgeons of this company are provided with transportation over our line, and we will request of other roads transportation for them to point of meeting, where their application is approved by our chief surgeon. We will also honor requests made by the proper official of any road a member of the pass agreement, for transportation of surgeons employed by them.—T. C. Purdy.

New York, Chicago & St. Louis.—We will be glad to take care of our own surgeons going as delegates to your convention, and will gladly honor requests from the proper officers of other companies, etc.—S. R. Callaway.

New York, Ontario & Western—I shall take pleasure in issuing transportation over this company's line for surgeons wishing to attend the convention of the National Association of Railway Surgeons upon application from the proper officer of the railway company where they are employed. Will also request transportation over other lines for the surgeons of this company.—J. E. Childs.

Northern Pacific.—This company will, as in the past, be very glad to issue passes to the accredited members upon request of the operating officers of the railway companies employing them.—J. W. Kendrick.

Pennsylvania Railroad.—Transportation to Chicago will be issued to such of our surgeons desiring to attend the convention as can be spared from their duties. To such surgeons of connecting lines that devote their entire time to the railroad service, and are carried on the pay rolls the same as other employes, we will be glad to furnish passes upon the application of the proper officer of the lines upon which they are employed, providing the lines are such that we have an exchange with, but we cannot issue free transportation to those who devote only a portion of their time to railroad work.—J. B. Hutchinson.

Pennsylvania Lines West.—Transportation to Chicago will be issued to such of the surgeons of these lines as desire to attend the meeting and that can be spared from their duties. It is our custom to issue passes to such surgeons of connecting lines as we exchange with, when requested by proper officer of the line on which they are employed, as devote their entire time to the railroad service, and are carried on the pay rolls same as other employes, but we cannot issue passes to those who devote only a portion of their time to railroad work.—L. F. Loree.

Peoria, Decatur & Evansville.—This road will take pleasure in meeting your requests.—E. O. Hopkins.

Philadelphia & Reading.—Transportation to be issued upon request by the proper officer of the company by which each member is employed.—Theodore Voorhees.

Rio Grande Western.—We will grant transportation to surgeons on request of proper officials of railroad companies.—D. C. Dodge.

Saint Paul & Duluth.—We will issue transportation to our surgeons as may wish to attend the convention, and will also request

transportation for them over connecting lines, and will also honor any requests made on this company by proper officers of other lines in behalf of surgeons employed by them.—A. B. Plough.

Seaboard Air Line.—It will afford us a very great deal of pleasure to recognize the request of any general manager or general superintendent of a railroad covering any considerable mileage, for the transportation of their representatives to the convention referred to in your communication of the 13th.—E. St. John.

Southern Pacific.—We will issue transportation over our own lines to such surgeons in our employ as may wish to attend the convention, with the distinct understanding that no transportation will be issued to doctors or surgeons whose entire time is not taken up in the service of the company. In other words, we do not consider that when we have a contract, paying a doctor or surgeon a stipulated sum for attending to our injured, in addition to his regular practice, that he therefore becomes a railway surgeon. We have a few regularly employed who devote all their time to the company's service. To these we will issue transportation over our lines if they desire it. We will request transportation for such surgeons over such lines as have indicated their willingness to give transportation on account of your convention. Our rules forbid asking for transportation for employes when traveling on personal business. We would be indisposed to request transportation unless informed that lines were perfectly willing to grant it on account of the convention of railway surgeons. We will honor requests for transportation of delegates to the convention when such requests are made by proper officers of other lines in behalf of their surgeons, but only on receipt of assurance over the personally written signature of the proper officer that such surgeon devotes his entire time to the service of the company and is not an outside doctor or surgeon and simply employed for a part of his time.—J. Kruttschnitt.

South Carolina & Georgia.—Yes, sir, we will issue passes over our line to such of our surgeons as may wish to attend the convention. We will honor requests made by proper officers for passes over our line.—E. S. Bowen.

Toledo, St. Louis & Kansas City.—It will give me pleasure to comply with your suggestions in regard to transportation for railway surgeons to the convention to be held at Chicago.—R. B. F. Peirce.

West Shore.—It has always been our rule, and I see no reason to change it, to issue passes to the surgeons of the various railways when requested by the proper officer of the road in whose service they may be engaged.—J. D. Layng.

Western New York & Pennsylvania.—This company will be pleased to issue transportation over its line on application from an operating officer of the road on which they are engaged. We will also request transportation for such of our surgeons as may wish to attend convention.—R. Bell.

Wabash.—We will be glad to issue to those for whom regular requests are made by the executive officer of the road by which they are employed.—J. Ramsey, Jr.

Wheeling & Lake Erie.—We shall be very glad to furnish our surgeons with transportation over our own line and over connecting lines to and from Chicago to enable them to attend the convention of the Association of Railway Surgeons, to be held in Chicago on May 4-6; also, we shall be very glad to honor requests from other lines for transportation of their surgeons over our line.—Robert Blickensderfer.

Wisconsin Central.—All of our surgeons are supplied with transportation over our lines, and I shall be pleased to issue passes for the use of surgeons of any other railway company who may desire to use our line, upon the request of the proper officer of the railroad company employing the surgeon. Trusting this will be satisfactory.—H. F. Whitcomb.

Under What Circumstances Is the Surgeon to Use Chloroform in Preference to the Less Dangerous Anæsthetic, Ether?

1. In hot climates where ether is inapplicable and where free circulation of air increases the safety of the patient. 2. Chloroform may be used whenever a large number of persons is to be rapidly anæsthetized, as on battlefields. 3. Its employment is indicated in cases of Bright's disease requiring the surgeon's attention, owing to the fact that anæsthesia may be obtained with so little chloroform that the kidneys are not irritated, whereas ether, because of the large quantity necessarily used, would irritate these organs. Quantity for quantity, ether is, of course, the less irritating of the two. 4. In cases of aneurism or great atheroma of the blood-vessels, when the shock of an operation without an anæsthetic would be a greater danger than the use of the anæsthetic, chloroform is to be employed, since the greater struggles caused by ether and the stimulating effect it has on the circulation and blood pressure might cause vascular rupture. 5. In children or adults who already have bronchitis, or who are known to bear ether badly, or in other words, have an idiosyncrasy to that drug, chloroform may be employed. 6. Persons who struggle violently and who are robust and strong are in greater danger from the use of chloroform than the sickly and weak, probably because the struggles strain the heart and tend to dilate its walls.—Drs. Hare and Thornton, The Journal of the American Medical Association, 1893.

Notes of Societies.

The seventh annual meeting of the Central of Georgia Railway Surgeons' Association will meet at Macon, Ga., on April 20, and a very excellent programme has been prepared for the occasion. Headquarters will be at the Brown House and there will be a musical entertainment in the evening by the inmates of the Georgia Academy for the blind. Dr. W. H. Elliott, chief surgeon of the company, is permanent president of the association.

The Missouri State Medical Association.

The Missouri State Medical Association will meet in St. Louis, May 18, 19 and 20. The Illinois State Medical Society meets in East St. Louis on the same days, and on the evening of the first day the Missouri Association will attend the session of the Illinois Society in a body. On the evening of the second day the Illinois Society will attend the session of the Missouri Association, after which there will be a joint banquet and reception. On the third day both bodies will adjourn and join in a steamboat excursion on the river. A pleasant and profitable time is anticipated and a large attendance is expected.

Meeting of American Medical Publishers' Association.

The fourth annual meeting of the American Medical Publishers' Association will be held in Philadelphia, on Monday, May 31, 1897 (the day preceding the meeting of the American Medical Association). Editors and publishers, as well as everyone interested in medical journalism, cordially invited to attend and participate in the deliberations. Several very excellent papers are already assured, but more are desired. In order to secure a place on the program, contributors should send titles of their papers at once to the secretary, Chas. Wood Fassett, St. Joseph, Mo.

The Wabash Railway Surgical Association.

We are indebted to the pages of the Fort Wayne Medical Journal-Magazine for the following:

The annual meeting of the surgeons of the Wabash railway was held in the parlors of the Southern Hotel, in St. Louis, Mo., on Thursday, November 5, 1896. The session was opened with the president, Dr. E. R. Lewis, in the chair, who made some remarks in reference to absent members, and who presented a very interesting address on the organization of the Wabash railway surgeons, the pioneer railway surgical association.

Dr. A. W. McCandless of St. Louis read a paper on "Traumatic Abscess of the Brain, with Report of Cases." He presented the patients to illustrate the cases reported.

Dr. Morehouse, chief surgeon, in discussing the paper, stated that he considered the cases presented by Dr. McCandless as being very interesting and instructive. They went to show the good results occurring as a result of surgical treatment of abscess of the brain. He made a motion requesting the publication of the paper.

Dr. E. W. Andrews of Chicago stated that this was the first meeting of the railway surgeons that he had attended, but that he felt sufficiently rewarded for coming all the way from Chicago in hearing the very practical paper of Dr. McCandless. In this connection he reported a very interesting case that he had operated upon for what was supposed to be a brain tumor, but which upon operation was found to be an abscess, a condition which had existed for sixteen years and due to trauma.

Dr. Thornton stated that he had had some experience in the treatment of abscess of the brain, and reported an unusually interesting case in which operation was resorted to without recovery. He attributed the result to postponement of operative procedures, and claimed that in all cases where the slightest symptoms indicated brain abscess the cranial cavity should be opened.

Dr. Lewis made some practical remarks and reported a fracture of the skull at the base, producing pressure and convulsive seizures which were relieved by operation. He thought that the X-rays might be used in this connection, and thought that we would be able in the future to differentiate between a physiological and a pathological tissue in the cranial cavity by means of the Röntgent rays.

Dr. J. W. Younge read a paper on "The Therapeutic Value of Venesection in Disease and Injury," in which he advocated the use of venesection in many plethoric conditions. He thought that while in early days venesection was carried to an extreme, at the present time it is not used often enough.

Dr. Rice, in discussing the paper, said that he believed that blood-letting had been too much abandoned, and cited a case of uremic convulsions in which the patient was greatly relieved by venesection. The patient had uremic convulsions again three weeks later and a second time was immediately relieved by bleeding. He stated further that he thought venesection applicable in many cases of pneumonia and pleurisy.

Dr. Baker said that he would indorse very little of the paper, and that if there was any place where he would advocate venesection it would be in the convulsions occurring during the puerperal state.

Dr. Highsmith said he had every reason to believe in venesection in certain cases, and particularly in cases of violent pneumonia. His attention was first called to this class of cases by an instance which occurred in his own practice. The patient having pneumonia, pronosticated as fatal, made an early recovery after a severe hemorrhage from the nose.

Dr. Stemen said that he used to be afraid to go to see his patients without his lances. Said he had bled no one for a number of years by opening a vein. Remembered having bled a railroad man frequently for vertigo. The patient finally had an attack of vertigo for which he was not bled and died from apoplexy. He also referred to a case of convulsions caused by impaction of seeds in the rectum.

Dr. Thorn stated that he had bled in pneumonia, pleurisy and eclampsia. He thought that in such cases venesection was of signal benefit when used with ordinary discretion. He said he had also bled for injuries of the chest, and took his cue from a case of injury to the chest which came to the clinic of Dr. Van Buren of New York, bleeding being resorted to.

Dr. Rickey said that he thought much of the supposed effect from bleeding came from psychologic effect, and cited the case of an old lady who insisted upon being bled once a year, and who was served equally well one year by having the arm scratched and a little warm water poured over the arm in a manner similar to the trickling of the blood in venesection.

Dr. McCandless reported a case of transverse fracture of the patella, and called particular attention to the fact that physicians must be sure that the fractured surfaces accurately approximate, if satisfactory results are to be secured. There is always a tendency for the edges of the apponurosis to drop in between the bones. The operation that he recommends is to tie the two surfaces together with kangaroo tendons, and if ordinary care is exercised the operation will result in perfect union.

Dr. T. B. Campbell read a paper on "The Value of Drainage and Irrigation in Septic Inflammation, with Report of Cases."

Dr. Weitz thought that the surgeon could not be too precise in effecting thorough drainage and irrigation in all forms of septic inflammation, and that as in railroad injuries we frequently find cases in which drainage and irrigation has not only been neglected, but is urgently demanded, he thought the paper a very timely one.

Dr. Young thought that the continued use of a strong solution of either bichloride of mercury or carbolic acid was dangerous, and he therefore resorted to a solution of bi-carbonate of soda, which he thought answered the main purposes.

Dr. Duncan reported a case in which a drainage tube had remained for eleven months before being removed.

Dr. Josepr Pouge read a paper on "Operation for Empyemia," in which he advocated the thorough evacuation of pus.

In discussing the paper, Dr. McCandless said that when there is a large accumulation of pus in the chest cavity it is dangerous to evacuate and wash it out at once. In such cases the pus should be removed gradually, though there is no question but what it should be removed thoroughly. He stated that he had seen plastic material on the inner wall of the chest one-half inch thick. If the pus is circumscribed it is allowable to remove it all at once. He thought that there was such a thing as too much irrigation.

Dr. Andrews said that in many cases of empyemia did not primarily originate as such, and that in a large proportion of these cases he would not irrigate at all, as he thinks that the case will recover more certainly and quickly if we do not irrigate. Irrigation is liable to set up an impulsive pneumonia. He said that he had seen the cavity in a small child healed up in two weeks without any irrigation. In chronic cases he sometimes used an irrigating solution composed of iodine and water mixed to the color of sherry wine. He thought it well to remember that the infection of empyemia is often due to the pneumococcus.

Dr. Andrews reported 184 operations for radical cure of hernia and described the various recognized operations for hernia. He stated that in the injection method relapses are liable to occur and usually before the lapse of a year. Aside from this the injections often cause permanent injury, the hernia becoming irreducible. If the injection is repeated every six months, in skilled hands, the hernia may possible be cured. The thought the radical cure the only one worthy of extensive use, and advocated the use of the kangaroo tendon, which will last about three months.

The following cases were reported: "Retained Soft Rubber Catheter in the Bladder, with Formation of Stone," by Dr. Gillaspy; "Removal of a Slate Pencil from the Bladder," by Dr. Highsmith; "Removal of a Stone in the Bladder Formed from a Nucleus of Chewing Gum," by Dr. Lewis; "Removal of a Small Pocket Knife from the Bladder of a Young Girl," by Dr. Rickey.

The following paper was read by title: "A Plea for Incineration of the Dead," by Dr. B. Lincoln.

The following officers were elected to serve for the ensuing year: President, Dr. Miles F. Porter, Fort Wayne, Ind.; vice-president, Dr.

George R. Highsmith, Carrollton, Mo.; secretary and treasurer, Dr. C. B. Stemen, Fort Wayne, Ind.

St. Louis was selected as the next place of meeting to be held on the second Thursday of November, 1897.

Communications.

Symbolism, Drachm and Ounce vs. Drachm and Fluid Drachm, Ounce and Fluid Ounce.

Austin, Tex., March 23, 1897.

To the Editor:

The almost universal custom among physicians of writing ℥ and ℨ in inditing prescriptions, exclusively, without regard to solidity or fluidity, seems to me exceedingly inappropriate and in bad taste. It is true the meaning in either case is obvious enough, but the beauties of appropriateness and exactitude in writing or in speaking along this line are found in the opposite formula. The ℥ and ℨ are weighed and the f℥ and fℨ are measured. Entirely different are the instrumentalities that are employed in their reckoning and what a dissimilarity in the things to which they refer! The character of the material, solid or fluid, suggests whether it is to be the scales or the graduating glass which is to be used in its manipulation, plainly enough, nor does it matter, that one contemplates grains and the other minims; practically it is the same; but what an injustice is done to refined and exact language! We could say with usual clearness as to our meaning "mule power" or "mare power" for horse power, but what a jar it would cause cultivated and refined sensibilities. On account of a regard for the "eternal fitness of all things" we should call things by their names, be exact in our allusions. Measure in medicine means "fluid measure," the graduating glass, and not the scales, or any computation of bulk by means of weights. A fluid (in spite of the suggestiveness of its materia medica name) should have its quantity prefixed by f, since measurement and not weight is contemplated. The example of our forefathers is old, but still a good one; let us continue it. The same, of course, applies to the use of gramme exclusively in lieu of gramme and cubic centimeter, solid and fluid respectively.

W. NEAL WATT,
SURG. A. & N. W. R. R.

Notices and Reviews.

The Fort Wayne Medical Journal-Magazine.

The Journal of the Medical Sciences, which has for sixteen years been issued from Fort Wayne, Ind., has been united in marriage to the Fort Wayne Medical Magazine, which was established four years ago. The marriage was consummated January 1, and the result of the union is certainly most creditable to all concerned. We wish the new journal success and prosperity and have no doubt that under the excellent management of Dr. Bulson the present excellent quality and appearance of the Journal-Magazine will be maintained.

BOOKS AND PAMPHLETS RECEIVED.

"Public Health Service in the United States," by Walter Wyman, A. M., M. D. Reprinted from the Cleveland Journal of Medicine, February, 1897.

"Mules' Operation for Artificial Eye," by Frank Allport, M. D. Reprinted from the Northwestern Lancet, 1897.

"Report of a Case of Gastrostomy," by M. F. Coomes, A. M., M. D. Reprinted from the American Practitioner and News, October 31, 1896.

"Congenital Ptosis—The Operation Devised by Panas for Relief Modified." By M. F. Coomes, A. M., M. D. Reprinted from the American Practitioner and News, December 12, 1896.

"The Technique of Operations for Acute Appendicitis," by Weller Van Hook, A. B., M. D. Reprinted from the Journal of the American Medical Association, February 26, 1897.

"A Basis for the Diagnosis of the So-Called Inflammatory Diseases of the Uterus," by C. S. Bacon, B. Ph., M. D. Reprinted from the American Gynecological and Obstetrical Journal, January, 1897.

"A Plea for Preliminary Iridectomy in Cataract Extraction," by David W. Stevenson, M. D., Richmond, Ind. Reprinted from the Transactions of the Indiana State Medical Proceedings, 1896.

"Failures of Midwives in Asepsis," by C. S. Bacon, M. D. Reprinted from the Journal of the American Medical Association, February 6, 1897.

"Hysteria in a Man; Tumor of the Brain; Locomotor Ataxia and Dementia Paralytica," by Hugh T. Patrick, M .D. Reprinted from International Clinics, Vol. LV, sixth series.

THE Railway Surgeon

VOL. III. CHICAGO, APRIL 20, 1897. No. 24.

RAILWAY SURGERY.*

BY JAMES G. HUNT, M. D., UTICA, N. Y.

The fact that I have been associated with the railroad men for so many years as railway surgeon enhances the great pleasure it affords me to be able to be here to-night to talk to you. The subject of the lecture which I propose to give you is "Railway Surgery." This will include fractures, sprains, contusions, shock and other injuries that occur on the road and in the shops. It will be my endeavor to present to you these different topics in such a manner that you will be able to thoroughly understand me, using terms which are familiar to all, save when obliged to introduce medical terms, because I cannot well express myself by any other. I hope by the aid of the manikin, the skeleton and charts to be able to make my talk quite clear to you all.

The great improvements in railways and their equipment, as well as the wonderful developments which have raised the service to its present high standard, have been brought about during the lifetime of many persons who are yet living. The wonderful, as well as the rapid, changes that have taken place since the time, sixty-five years ago, when Peter Cooper, with his one-ton engine, was experimenting, are shown by the following figures:

In 1830 there were only 23 miles of railway, and in the following year only 72 miles more, making a total of 95 miles.

In 1840 there were 3,000 miles.
In 1850 there were 9,000 miles.
In 1860 there were 30,000 miles.
In 1870 there were 60,000 miles.
In 1880 there were 90,000 miles.

In 1890 there were 175,000 miles, and at the present time there are about 250,000 miles.

From statistics it is shown that the brains, as well as the muscles of over 2,000,000 men have been employed in the building, equipment and operation of the present railway systems. The railway officials throughout the country have made great and rapid progress in reducing the number and severity of accidents, and our first-class roads now compare more than favorably in this respect with the best railways of Europe. The possibility of railway accidents has always been a source of anxiety to railway managers and the shock received by the public should deepen the interest in the means taken to avoid all painful occurrences of this kind.

Many of the injuries which the railway surgeon has to deal with are of a peculiar nature, and oftentimes they are quite severe, but fortunately a majority of the cases are of a minor character, such as naturally follow in the coupling of cars, or from accidents in the car shops. Many of these accidents happen at night, and at some out-of-the-way place, distant from medical assistance, and frequently in the most disagreeable weather. In such cases the delay and exposure are influences that may add greatly to the shock of injury before the sufferer can receive proper attention.

The object aimed at in these plates [exhibiting a manikin and charts] is to give a view of the human structure on the scale of life, and to show exact representations of the parts as they appear in life, thus furnishing both the physician and the layman with correct information, which shall be a sure guide in all cases requiring an intimate and thorough acquaintance with the anatomy of these parts.*

* A lecture delivered before the railway branch of the Y. M. C. A. at Utica, New York, February, 1897.

* The speaker, Dr. Hunt, then explained the different plates of the manikin, which numbered over fifty, illustrating the muscles, ribs, lungs, heart, liver (A), normal condition; (B) nutmeg or "gin" degeneration from the use of alcohol; (C) cheesey degeneration from the effect of long drinking; (D) cancerous liver; the interior of the stomach, showing the effects of moderate drinking, also condition in delirium tremens; the intestines, arteries and veins, general circulation of blood, nerves, brain and spinal cord.

The skeleton of the head and trunk were also shown and the doctor pointed out the manner in which many surgical operations are performed. He then exhibited charts of magnified sections of the nervous tissues, muscular fibers, mucus membrane of the stomach, the larynx cut open to show the vocal cords, sections of the kidney, microscopical section of the "nutmeg" liver from the use of alcohol, microscopical section of a healthy liver, section of a drunkard's kidney, section of a healthy kidney, microscopical section of the lining of a healthy stomach and a similar section of a drunkard's stomach.

you have such an article at hand. The patient is to be moved about as little as possible. Unnecessary handling, moving, changing the clothes, etc., only tend to increase the exhaustion. Heat must be applied to the whole body if possible. Roll the patient up in hot blankets, or give him a hot bath if you have the conveniences at hand. Make use of bottles filled with hot water; in fact, anything productive of heat that can be gotten hold of. The two important points at which to apply heat are the region of the heart and the pit of the stomach. In making the application great care must be taken not to burn the patient, for in this condition he would not feel pain even were the amount of heat so great as to severely burn him. At the same time you may give him or her, as the case may be, hot drinks, with whisky or brandy added, but in small quantities, and repeated often. The proportions may be, say, a teaspoonful of brandy or whisky to a tablespoonful of hot water, which may be given every ten minutes. Or what I consider the best of all is aromatic spirits of ammonia; a teaspoonful to half a tumblerful of water and give a little at a time until the surgeon arrives.

FRACTURES.

A broken bone may be recognized by the occurrence of pain, of deformity, of bending where it ought not to bend, and of a sound and feeling of grating at the point of fracture. A fracture may be partial or complete, transverse, oblique or longitudinal; single, double or multiple; simple, comminuted, compound, compound and complicated. A partial fracture occurs when a bone breaks, or splinters on one side (its convex surface) and bends on theopposite(green stick fracture). A transverse fracture, or one in which the line of cleavage is, in general, at a right angle with the axis of the bone, is rare as compared with the oblique. A longitudinal fracture is a split in the long axis of a bone. It is frequently caused by penetrating wounds (gunshot), or may result from a fall with great violence upon the hands or feet when the cleavage commences in the articular surface. A single fracture is one break in one bone. A double fracture is a solution of normal continuity in two bones of one member, as the radius and ulna, the tibia and fibula. Multiple fracture is a term applied to two or more separate breaks in one or several bones.

When a bone is broken in one direction, and at one point, without injury of any surrounding organ or perforation of the skin, it is termed a simple fracture. If there are more than two fragments it is a comminuted fracture. If any part of the fractured surface communicates with the atmosphere it is a compound fracture; and if it communicates with a joint, or involves in the fracture the wound of any important organ, as a large artery or vein, or as in the fracture of a rib, occasionally the pleura or lung is wounded, it is a complicated fracture. An impacted fracture is one in which the fragments are splintered and interlocked with more or less complete immobility.

A fracture may be caused by external violence, directly or indirectly applied, or by muscular action, or both factors may unite in the production of the lesion. As an example of direct violence in the effort to ward off a blow from the head, the ulna may be broken by the force of a cane immediately beneath the soft parts. A blow on the vertex which fractures the base of the skull or a fall on the foot which breaks the femur are common examples of fracture from indirect violence.

Contraction of the quadriceps extensor muscle may fracture the patella, or the same lesion may result from a fall on the knee, in which the direct violence and the action of this powerful muscle unite to cause the fracture. The bones of the aged break more readily and are slower in repair than those of the young and middle-aged. The bones of the right side are more frequently broken than those of the left. During childhood the frequency of fractures in males and females is about the same. During middle age it is ten times as great in males as in females. Between the ages of 50 and 70 years the difference is slight, and after the age of 70 years fractures are more common in females than in males, those most frequently met with at that age being fractures of the neck of the femur. Fractures are most numerous in children under 10 years of age.

Symptoms.—The symptoms of fractures are loss of function or use, absence of normal contour and crepitus. A broken bone which is not impacted no longer acts as a support, or sustains muscular contraction. The natural

shape or outline is more or less distorted by displacement and overlapping of the fragments. Careful manipulation will determine the overriding, measurement will show shortening, while comparing it with the uninjured side will determine the degree of the injury. Crepitus, which is not always necessary to correct diagnosis, is the sensation imparted to the touch, and occasionally recognized by the ear, when the rough fragments are moved so as to grate upon each other. The diagnosis of the impacted fracture is more difficult, since crepitus and mobility are absent. Shortening must of necessity exist, which, with partial loss of function, and more or less pain and thickening at the point of fracture, will lead to the recognition of the lesion. A longitudinal fracture or fissure is often with difficulty recognized and may escape detection.

Process of Repair.—The first and immediate result of a fracture is hemorrhage, which occurs from the arteries, capillaries and veins. As a result of the irritation, determined by the accident and hemorrhage, inflammation follows. If the broken ends do not come in contact with the air, that is, if the fracture is not compound, the process of repair in bone after the injury is similar to the physiological process of development of this tissue, namely, the embryonic tissue is developed into cartilage cells, and these undergoing proliferation develop into a secondary embryonic tissue which is formed directly into bone. If, however, air is admitted to a wound in a bone the process of ossification in the embryonic tissue is more rapid and direct, since the intermediate stage of cartilage cell formation does not occur.

A portion of this new formed issue, which results from irritation following a fracture, undergoes a process of calcification by the absorption of inorganic material from the blood, and is then known as callus.

That portion which lies around and on the outside is the ensheathing callus; between the fragments the intermediate.

In connection with this subject I wish to say a few words about fractures of the skull, injuries which so many railroad men receive by falling from the tops of cars, especially when the roofs are slippery and covered with ice. The bone of the skull may be fractured by direct or indirect violence. Direct when the bones give way immediately beneath the point which is struck; indirect, as when by falling from a height and striking on the feet or buttocks the base of the skull is fractured by the force transmitted through the vertebral column. A number of years ago I had a case which is worthy of mention, and perhaps many of you may have heard of it. A night watchman was employed on the N. Y. C. & H. R. R. R. in the lower yard at Utica. His name was Christian Slaper. While going his rounds among the freight cars he suddenly came upon a party of tramps who were breaking into a freight car. They turned upon him and with a hatchet struck him on the head, crushing in the skull for a space of about two and one-half inches in diameter. He laid insensible for over an hour and finally was found by some of the yardmen about 2 o'clock in the morning. They placed him on a handcar and brought him to the depot. When I arrived I found him unconscious and bleeding very profusely. I took him to his home on Water street and washed out the wound with an antiseptic solution, after which I cut down and removed several pieces of the bone. In the course of a day or so he became conscious and related to me the whole affair up to the time he was struck on the head.

Strange to say, before the wound healed at least two or three tablespoonfuls of the brain substance sloughed out. He made a splendid recovery and is alive and well, or was the last time I heard from him, which was only a few days ago. He is now about 75 years old.

SPRAINS.

A sprain is a wrenching or twisting of a joint, associated with considerable stretching and even tearing of the tendons and ligaments of the affected parts. Sprains usually occur at the ankle or wrist. Pronounced swelling and pain rapidly follow and are characteristic of the injury, though it is often difficult to tell the difference between a sprain, dislocation or fracture. The proper relation of the ends of the bone composing the joint, and the absence of the principal signs of dislocation or fracture, indicate that a sprain exists. A sprain is always troublesome and may be followed by severe results, a common sequel being anchylosis or stiffness of the joint. Sprains are sometimes quite trifling injuries and require no treatment but a little rubbing or a little

rest. At other times sprains are more serious and require as careful treatment as do fractures. In all forms of sprains rest is the most important thing to be secured, and after this comes moist heat. To secure rest a bandage will sometimes do, or a sling, or both. The ankle or foot may be helped by having a neatly folded towel, folded again, so as to make a sort of a rough splint, and placed around it before the bandage is put on. Besides this mode of treating sprains, wooden or other splints may be used if necessary and convenient. In sprains of the wrist, the hand and the forearm, the injured part may be laid on a straight splint, covered with cotton, wool or waste, so as to make the surface soft, and be lightly secured to it by means of a soft bandage or broad strips of sticking plaster. One of the bandages should be around the hand and one or two around the forearm above the wrist, not over it. The bandage should cover all. Sprains of the ankle should never be treated lightly. Accompanying them there is not infrequently a fracture of the inner surface of one of the leg bones that form the ankle-joint. This complication gives rise to so much trouble and requires so much skillful and patient treatment that it has come to be believed that it is better to have a broken leg than a sprained ankle. The general principle, however, in the case of a sprained ankle is, first, to put the joint at complete rest, then to allay inflammation if it arises, and afterward to promote the absorption of inflammatory products. For the first a splint and bandage usually suffice; for the second, application of hot water; for the third, friction and kneading the joint, with careful motion of it, and alternating hot and cold douching. Nerves, too, are not infrequently bruised, the injury resulting in numbness and loss of power of the parts below the joint, and in obstinate neuralgia. The ankle and wrist joints are sprained most frequently, and this is due not only to the freedom of their movements, but chiefly to the relations which they hold to locomotion in one instance and to self-defense and protection in the other. The knee-joint is less frequently sprained than one would suppose from the knowledge of its relation to the weight of the body and to the leverage of the extremities, in which function it forms a most important adjuvant.

CONTUSIONS.

A contusion is a surgical injury other than fractures or wounds proper in which the skin remains intact. If there be a solution of continuity of the skin also the termed contused wound is used. Contusions are what are usually known as bruises. They are sometimes very painful and are often followed by discoloration due to the escape of blood under the skin from the small vessels of a part. A "black eye" is a familiar example of an injury of this sort. Contusions of the chest or abdomen may be very serious; for, besides the external bruises, important internal organs may be injured. Evidence of this may be seen in the spitting of blood or vomiting, or the passage of blood from the bowels or bladder; or there may be great depression. In such cases little can be done by the non-professional man beyond securing complete rest and sustaining the strength of the sufferer by means of warmth applied externally and careful stimulation internally.

EMERGENCY CASES.

Many railways, and especially those throughout the western and southern country, have a case completely equipped with necessary instruments, needles, dressings, roller bandages and appliances, with printed directions as to the care of injured persons. These cases are generally placed in charge of the conductor or foreman, who keeps it in his train box and is held personally responsible for the same. The following list of articles would answer all purposes in almost any emergency case until the arrival of the surgeon, and the latter, if he comes, as many times he does, empty-handed, can use the same:

4 ounces green soap.
6 roller bandages.
2 Esmarch's rubber bands.
1 yard aseptic gauze.
1 yard lint.
1 blanket.
½ dozen pine strips (thin) 4 inches wide.
2 ounces aromatic spirits of ammonia.
1 spatula.
1 pair scissors.
2 Esmarch's fracture bandages.
½ pound absorbent cotton.
1 roll adhesive plaster (1 yard).
2 hot water bottles (rubber).
3 feet rubber tubing.

4 ounces whisky.
6 ounces ichthyol ointment.
1 pyramid of pins.
1 dozen large safety pins.
1 ounce styptic cotton.
4 surgical needles.
6 sizes silk thread.
1 razor.
3 catheters.

The first thing to do in case of an accident is to place the injured person in as comfortable a position as possible. Loosen the clothing so that the breathing may be free and keep him warm.

Dislocations will be known by the deformities about the joints; wait for the surgeon to come and he will set them.

Sprains.—Apply either hot or cold water and keep the joint quiet.

Fractures can be readily known. Compare with corresponding limb of opposite side and place it in a position as nearly like it as possible. It can be held in place by a bandage, with strips of bark, pieces of shingle, or a blanket folded and rolled tightly around it and tied on with strips of cloth. Always place the fracture in a position to give the least pain.

For bleeding.—Raise the limb; wash clean; if the blood comes in bright red jets apply the straps above the bleeding points just tight enough to control the flow.

Caution.—Do not draw the strap too tight, as it will cause useless pain. If the blood is dark colored apply cloths wrung out of hot water, or a firm bandage. Elevate the limb. You can use the fingers for compression in the wound if necessary.

Dressing.—Wash every break of the skin with hot water, if possible; then apply gauze or some other clean cloth in layers of three or four thicknesses, held by a bandage, and notify the nearest convenient company's surgeon. If the injured man feels faint and weak lay him with his head low and give him some hot drink. Coffee is one of the best; brandy or whisky if necessary, but do not give too much.

Dr. Samuel H. Pinkerton has been appointed chief surgeon of the Oregon Short Line, with headquarters at Salt Lake. Dr. Pinkerton is one of the leading physicians in Salt Lake City and a most excellent surgeon.

THE NURSING OF THE EYE AFTER INJURIES AND OPERATIONS.*

By Cassius D. Wescott, M. D., Chicago.
Instructor in Ophthalmology at Rush Medical College; Ophthalmologist for the C. M. & St. P Ry., etc.

It is often said that it is impossible to do an absolutely aseptic operation upon the eye, and this is true, because the conjunctival sac constantly contains numerous micro-organisms which it is impossible to completely remove or destroy with safety to the tissues of the eye. These facts, however, instead of relieving us from the necessity of observing any of the usual precautions in the treatment of wounds, make it even more important that we exercise most scrupulous care in regard to the surroundings, the instruments, the hands and the dressings, in order to limit as much as possible the number of germs which must necessarily come in contact with the eye and be taken care of by nature's own germicidal processes. As we are all obliged to act as nurses as well as physicians in the care of many of the eye patients which fall into our hands, and as we must always instruct even the most thoroughly trained nurse in the methods which we wish to have employed, I have thought it might be well to discuss together to-day some of the details of ophthalmic nursing.

There is probably no part of the body which will stand relatively more traumatism without loss of function than the eye, and yet the neglect of any detail in the management of an operated or diseased eye may result in infection and the loss or impairment of vision. We must never forget that corrosive sublimate, carbolic acid and other antiseptic agents, which are well borne by other tissues of the body, act as powerful irritants to the conjunctiva and cornea, exciting inflammation and destruction of these delicate tissues. In my own work I have practically discarded all antiseptics, save boric acid, in the preparation of the eye for operation, and in cleansing it at subsequent dressings. Possibly the thorough use of sterilized water would give me equally good results, but I believe that a saturated, sterilized and filtered solution of boric

* Read by title at the fourth annual meeting of the C. M. & St. P. Railway Surgeons' Association, held in Chicago, Nov 12-15, 1896.

acid is less irritating to the eye than pure sterilized water.

In the preparation of the patient for operation, for cataract, for instance, I have the face thoroughly scrubbed with soap and hot water, especially the eyebrows and lids and the nose; I then have the patient wash the face again with plain water as hot as can be borne, and have the nurse pin a sterilized towel snugly over his hair. After he is upon the table I flush the conjunctival sac several times with boric acid solution, preferably at the temperature of the body. If, however, I am to dress an injury to the lids in a railroad man, for instance, who has fallen from a train and struck upon the face, filling the skin with cinders or dirt, mixed perhaps with oil and other things, it has been my custom to apply a hot fomentation, made by dissolving in boiling water borax or sodium carbonate in the strength of 1 or 2 per cent. After fomenting the parts for ten or fifteen minutes, it is usually possible to cleanse the skin thoroughly by gently scrubbing with the same solution, followed by a flushing with bichloride solution 1-5000. Instruments are best sterilized by boiling in a 2 per cent. solution of sodium carbonate, but I am content to sterilize the knives and scissors by simply pouring upon them boiling water, and then transferring them to alcohol, where they are allowed to remain several minutes, or until needed for the operation. It is certainly much safer to boil our forceps, needle-holders, specula and other complicated instruments, and we should certainly thoroughly scrub and boil all of these after they have been used about an infected case.

Even though our fingers do not come in contact with the parts operated upon, we should be as careful in cleansing the hands before operating or dressing an eye as if we were about to go into the abdominal cavity. I am content to thoroughly scrub my hands with soap and very hot water, using a stiff brush before and after cleansing the nails with a knife, and then thoroughly rubbing the hands, and especially the fingers, with alcohol.

The bottles which are to contain my cocaine solution, the atropine solution and the saturated solution of boric acid are cleansed by boiling for fifteen minutes before being filled. The pipette, or dropping tube, is sterilized with the instruments each time before being used in an operation, and in the subsequent dressings, and after a dressing is no longer needed, it is thoroughly cleansed with hot water each time before and after being used. In my office I keep a number of pipettes constantly immersed in a 1-1000 solution of formalin, a comparatively new antiseptic agent, which is acquiring such great favor that perhaps a few words in regard to its use in eye surgery may not be amiss.

It is unquestionably a safe and efficient agent if properly used, but like all other powerful antispetics it has its own disadvantages. It can safely be used upon the eye in a strength of 1-1000, and in such a solution is more efficient, perhaps, than a saturated solution of boric acid, and less irritating than the bichloride solutions. In the strength of 1-100 it acts as a cautery, and is an efficient application for infected ulcers and suppurating wounds of the cornea, but its application must be limited to the exact spot where its effect is desired. If used for the sterilization of instruments, which, by the way, it does not tarnish or discolor, it may be used in a strength of 1-200 or 1-500. Personally I do not use it for the sterilization of instruments, for the reason that it is a very penetrating agent and quickly hardens the skin of the fingers, making them rough and less sensitive.

For sponges I use suitable pieces of lintine moistened with boric acid solution. Silk for sutures is sterilized by boiling and kept in strong alcohol. I prefer the "iron dyed" silk. Kangaroo tendon, which I have used a great deal, is sterilized in the manner so often described by Dr. Marcy, and preserved in alcohol.

In regard to the materials for dressing, I would say that I have found borated gauze, borated cotton and lintine, purchased in original packages from reliable manufacturers, and subsequently well cared for, to be perfectly reliable and sufficient for all our needs. After smoothly closing the lids over an operated eye, I am in the habit of covering them first with a single layer of lintine or borated gauze moistened with boric acid solution, and then applying over this sufficient fluffy borated cotton to fill the concavity of the orbit, and over this a bandage of white mosquito netting, saturated with hot water. Such a

bandage contains sufficient starch to make a smooth, firm dressing when dry, and it is sufficiently light and porous to be the coolest and most comfortable bandage which a patient can wear; and we must never forget that confining an eye with too bulky a dressing but promotes the growth and multiplication of the micro-organisms which are always present in the conjunctival sac. For the same reason it is necessary to re-dress an injured or operated eye at least once in twenty-four hours, unless there is some unusual circumstance making it desirable not to disturb the eye for a longer time. It is very easy to be less careful in making the after dressing of any wound than we were at the time of the operation or in applying the first dressing, and we should be constantly on our guard not to omit any detail in conection with any subsequent dressing, which we insisted upon as proper in preparing the eye for operation, or in making the primary dressing. After an operation or an injury in which the eye has been opened it is best to bandage both eyes for the first two or three days and the patient should not move about much. Vomiting, coughing and sneezing after such operations are to be avoided if possible, vomiting being particularly disastrous.

If the dressing or cleansing of an eye is intrusted to a nurse, we must insist that she observe every detail of asepsis and we should follow her through one dressing to see that our instructions are understood. We should not fail to caution her that any discharge from an eye may be the source of infection, and that she must cleanse her hands after as well as before every dressing. If two or more patients are being cared for in a hospital ward, or private home, each one should have his own bottles of eye-drops and his own pipettes, and after his discharge both bottles and droppers should be boiled before being used again. The pipettes should have bulbs of pure gum which can be boiled many times and do not give off fine particles to contaminate the solution as do the white ones. All collyria act better, are more quickly absorbed and are more agreeable to the patient if applied warm, and it takes but a few moments to raise them to blood heat by immersing the bottle in boiling water.

It seems a very simple thing to write about, but there is a best way to apply lotions to the eye. If we attempt to drop the solution upon the cornea the eye is quickly closed, only a fraction of a drop remains in the eye and does little good. If, however, we will have our patient look up while we pull the lower lid down, we obtain a groove which will contain a number of minims of fluid, and holding the lid in this position for a moment or two the solution has an opportunity to diffuse itself in the conjunctival sac and be absorbed by the cornea. Then, if the patient will look down while he tips the head back, we can expose the upper cul de sac by placing the thumb against the upper lid, just below the brow, and pulling up on it. The finger should never press against the eyeball, and the raising of the upper lid should be done with the greatest gentleness if there is a wound of the globe or an ulcer of the cornea which might be ruptured. In making applications to the eyes of babies and small children, the mother or nurse should sit facing the surgeon, holding the child in her lap. If the surgeon will then take the child's head gently between his knees, he will find that he is master of the situation.

The application of heat is best effected by the use of light compresses of borated gauze wrung out of hot water, kept constantly at a temperature of 110-120. The compresses should be changed every few minutes for an hour once or twice a day, or for fifteen minutes every three hours. Such fomentations are particularly useful and grateful in cases of inflammation of the cornea and iris.

Cold is best applied by means of iced compresses made by cooling pieces of borated cotton on a block of pure ice. They should be renewed every five minutes. Such applications are most useful in the first twenty-four hours after burns and other painful injuries of the eye. They should never be used in iritis or keratitis. They give great relief in purulent conjunctivitis, if used for an hour a day immediately following the application of the nitrate of silver.

Leeches are undoubtedly helpful in acute inflammatory conditions of the inner tunics of the eye (iritis, cyclitis, etc.), and are best applied to the temple by putting the leech in a test tube partly filled with water and placing the open end of the tube against the skin.

A word in regard to the use of mydriatics,

myotics and cocaine. Atropine is the anodyne par excellence for the eye in practically all painful affections except glaucoma. One or two drops of a 1 per cent. solution (5 grains to the ounce) every three hours should be the maximum dosage. Its use promotes resolution in keratitis, relieves the pain and promotes the healing of corneal ulcer, and is essential in iritis to relieve the pain and prevent adhesions by dilating the pupil. Eserine contracts the pupil and relieves the pain of glaucoma and is useful in marginal wounds and ulcers of the cornea by contracting the pupil and getting the iris out of the way. Cocaine is still the best local anæsthetic we have in eye surgery, but should never be used simply for the relief of pain in an eye, for the lasting but a few moments, and its continued use is destructive to the corneal epithelium.

Rest in bed is essential to the success of reason that the anæsthetic effect is transient, some eye operations and should be insisted upon for the first twenty-four or forty-eight hours after perforating injuries to the eye. Such a patient should wear a stiff mask (Dr. Ring's) or a wire gauze protection over his bandage at night, and his movements should all be made with gentleness and deliberation. His food should be nutritious but soft and easy of digestion. After cataract extraction I order a liquid diet for the first twenty-four hours. I do not believe in confining the bowels in these cases, but give my patients sufficient laxative medicine to insure an easy movement daily. It is absolutely essential that patients having both eyes bandaged, especially old people, be entertained and amused. In all cases of inflammation of one eye the use of the fellow eye for near work must be prohibited.

The care of complications depends so much upon individual conditions that only general directions can be given. The following signs may warn us that things are going wrong: (1) Rise in temperature. (2) The continuance of pain. (3) The presence of discharge. (4) The swelling of the lids.

One of the simplest accidents after an operation or dressing may be the detachment of an eyelash which gets into the conjunctival sac, causing considerable irritation. It should of course be removed at once and the eye flushed with boric solution. Spasm of the orbicularis may occur from irritation of the bandage and the lashes of the lower lid be brought in contact with the eye by turning in of the lid. Painting the lid and the skin immediately below with contractile collodion may afford relief, but it may in some cases be necessary to substitute a shade for the bandage in order to stop the spasm. Sometimes a stitch has been found necessary.

Iritis is a frequent complication after perforation of the globe, and, like suppuration, usually signifies infection. It manifests itself four or five days after the injury or operation by pain, swelling of the lids, lacrimation and intolerance of light. Leeches, to the temple, hot fomentations and atropine are the remedies indicated.

Suppuration of the wound is the most dreaded of complications and frequently means the loss of the eye. The eye becomes painful and bloodshot, the lids are swollen and the wound looks gray and is bathed in pus. Sometimes thorough and repeated disinfection followed by dusting of the wound with iodoform, and the use of hot applications, will stop the destructive process, but if these measures fail the application of the actual cautery to the suppurating area is our best remedy, after which the disinfection and fomentations should be continued until the danger is passed. A nourishing diet and stimulants are indicated in such cases, and pure air and cheerful surroundings should not be forgotten.

31 Washington St.

PERNICIOUS MALARIAL FEVER IN A NEW-BORN CHILD.

By Victor Cadwell, M. D., Popiar Bluff, Mo.

As active malarial symptoms in the newborn are rarely observed, the present case may prove of interest. Early in the afternoon of February 24 I was called to see Mrs. R., multipara, 23 years of age. She had been suffering for several days with a tertian type of malarial fever, having had her last chill during the forenoon of the day I was called. Her temperature was 103.5 degrees and she was just beginning to perspire. There was a history of several similar attacks in the past two

years. The patient was pregnant and thought herself six weeks beyond term, but from the meager data I could obtain I judged that she was just about at term. She complained of general muscular soreness and dragging pains in small of back. Examination showed a cervix very much softened and a slightly dilated os.

At 4 o'clock the following morning I was called hurriedly and arrived just in time to deliver a ten-pound boy. Both mother and child did well, the child being apparently in a perfectly normal condition, passing the usual amount of meconium and urine, crying lustily and nursing and sleeping well. On the morning of the following day the mother had her regular chill, despite anti-malarial remedies. At the same time the child became cold, its face blue and pinched and the fingernails blue. This condition lasted a variable length of time, according to the testimony of those present probably half an hour, and then passed off, leaving the child with an intense fever. On my arrival I found the child comatose and cyanotic, the respiration rapid and labored, with a rectal temperature 105.5 degrees, and presenting a picture of acute pernicious malarial congestion, which ended shortly in death, in spite of active rectal medication and stimulation given with only faint hope of success. Unfortunately no blood examination could be made for the plasmodium malariæ, but it seems to me there can be no doubt as to the character of the trouble.

A Cook Tour to the International Medical Congress.

The following circular letter, signed by several prominent Chicago physicians, has been sent out:

"Chicago, March, 1897.

"Dear Doctor:—It is believed that a considerable number of American physicians will visit the twelfth International Medical Congress, to be held in Moscow, August 19-26, 1897. As all those who wish to attend the congress have a common objective point, it is thought that they can be associated to advantage in one or more excursion parties. In this way the social features of the trip will be enhanced, and each individual will be surrounded by those who are personally congenial. By such association better accommodations can be secured and at considerable reduction in price. Additional security will also be attained, as parts of the trip, which include comparatively unfrequented routes of travel, will be under the charge of a traveling director who is thoroughly conversant with the languages and customs of the country visited.

"As there will doubtless be some divergence as to choice of routes, depending on individual inclination and previous opportunities for foreign travel, several routes have been selected. By reference to the accompanying itinerary it will be seen that in these, although separate for a portion of the journey, the principal points are visited together.

"Final arrangements are in the hands of the well-known tourist agents, Thomas Cook & Son, thus affording ample guaranty that the tour will be satisfactorily conducted.

Yours very truly ,
"Nicholas Senn, M. D.,
"Casey A. Wood, M. D.,
"Harold N. Moyer, M. D.,
[Signed.] "Eugene S. Talbot, M. D.,
"D. R. Brower, M. D.,
"J. B. Murphy, M. D.,
"D. A. K. Steele, M. D.,
"B. T. Whitmore, M. D."

A pamphlet descriptive of the itineraries may be had by addressing Messrs. Thomas Cook & Son, No. 261 and No. 1225 Broadway, New York, or No. 234 South Clark street, Chicago.

First Aid Instruction on English Roads.

Recognizing the great advantages of instruction in "First Aid," the directors of the Great Western have decided to further encourage the work of the St. John's Ambulance Association amongst their staff, by the establishment of an organization which will arrange, at the cost of the company, classes at various points of their system, which extends over 2,500 miles of country. The members of the staff take the greatest interest in the work, and since November last upward of 1,500 of the company's employes have given in their names for instruction in rendering "First Aid." This number is in addition to some 2,500 men who have already undergone training and are duly qualified by the rules of the St. John's Ambulance Association to render "First Aid." These represent all grades and departments in the service, and many of the classes already examined have been complimented by the examiners on the high degree of efficiency attained in a knowledge which is so necessary and valuable, not only in the interest of the members themselves, but also in that of the traveling public. Her Royal Highness Princess Christian, president of the Great Western Railway Center, who has always taken a deep interest in the work, has consented to present, in the month of May next, at Paddington Station, the certificates to the successful candidates in the London district.—Transport.

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J. N. JACKSON, Kansas City, Mo.; JAS. A. DUNCAN, Toledo, O.; J. B. MURPHY, Chicago, Ill.; S. S. THORNE, Toledo, O.; W. D. MIDDLETON, Davenport, Ia.; A. J. BARR, McKees Rocks, Pa.

FIRST AID TALKS TO RAILWAY MEN.

In other columns of this issue we publish a lecture delivered by Dr. James G. Hunt, medical examiner for the New York, Ontario & Western Railway Company, before the railway branch of the Young Men's Christian Association at Utica, N. Y. The Y. M. C. A. has a building in Utica which is open day and night for the comfort and benefit of the employes of all railways entering Utica. Educational classes and courses of lectures have been arranged which must be of great interest and value to those attending. From a little circular which Dr. Hunt has sent us we note that talks have been given upon the subjects of "Color Blindness," "Railroad Signaling." "Electricity," "Qualities that Win," and "Railway Surgery." The railway men of Utica are certainly to be congratulated upon having such rare opportunities, and we quite approve of talks to railway men upon the subject of railway surgery. It is obvious, however, that the greatest difficulty will arise in the effort to so simplify technical matters as to avoid confusion and render them practically useful. Teaching is an art which it is apparently impossible for some men to acquire. Certain natural gifts seem to be necessary, and truly successful teachers are consequently rare. We believe that talks upon "Railway Surgery," for the benefit of railway men, should be rather informal than otherwise, and the men should be requested to interrupt the talk and ask questions wherever necessary to clear up points which are not presented in proper form for their understandin.g We who are constantly thinking of scientific matters in technical form art apt to forget how utterly unintelligible language, which is perfectly familiar to us, is to the mind untrained in technical matters.

ABOUT TRANSPORTATION.

In addition to the responses received from railway companies in the matter of transportation to the annual convention which were published in our last issue, other replies have since been received, including the following:

Illinois Central Railroad.—Referring to your favor 10 inst., in reference to the annual convention of the National Association of Railway Surgeons, to be held in Chicago May 4 to 6, 1897, the practice of this company in the past has been to issue passes to its own surgeons going to these conventions, and to surgeons of other roads upon receipt of request from the proper officer. We shall probably do the same this year.—J. T. Harahan.

Chicago & Alton.—Answering your favor of April 10, addressed to Vice-President Chappell, the Chicago & Alton railroad will, as heretofore, transport the delegates to your national convention, upon the request of the general manager or general superintendent of the railroads upon which such delegates are employed. The delegates can secure transportation by presenting their membership certificates properly indorsed by the general managers or superintendents of the roads to which they belong, at the passenger office of this company at Kansas City, St. Louis and Peoria.—J. H. Wood.

We quote these two letters in particular, as the Wabash railroad having already responded, the three main lines between St. Louis and Chicago now stand ready to furnish necessary transportation, and we would suggest that as far as possible applications for transportation

from St. Louis to Chicago and return be distributed between the three companies. The travel from St. Louis will probably be heavy and too much of the burden ought not to be thrown upon any one of the three lines.

OUR EASTERN FRIENDS.

In an editorial in a recent issue of the International Journal of Surgery, the editor, Dr. George Chaffee, of the department of railway surgery, after announcing the coming meeting of the National Association of Railway Surgeons and the topics which were suggested by The Railway Surgeon as proper subjects for discussion, writes as follows:

"Why is it that the National Association of Railway Surgeons has never held a meeting in New York City? Have the officials and surgeons of our eastern lines ever asked themselves this question? It is because railway surgery in the East is in such a backward state from lack of organization of surgical departments that the executive committee of this beneficent association, with its membership of nearly fifteen hundred surgeons, has, so far, felt rather delicate about accepting an invitation to call a meeting in this city. Here is a society of surgeons organized for humane and scientific purposes; the result of their efforts is broad and far-reaching, affecting favorably the economic, social and relief interests of employer and employed.

"In May of 1892, at the Old Point Comfort meeting, President Dr. J. H. Murphy, in responding to the address of welcome, said: 'I remember very well during the war when we tried hard to get to Richmond, but we could not do it [laughter], but yesterday we had no trouble whatever to get there. My friend, Dr. Outten, has written not to one, but to every railroad in America, and all of the roads except one have said: "We will give you transportation; you belong to us and we belong to you."'

* * * * *

"If a staff of fifteen hundred specially trained surgeons holding themselves in readiness for immediate service with our army of railway employes, and in case of disaster on any line, was entitled to transportation over all American lines except one in 1892, and from Cincinnati and Richmond to Old Point over the C. & O., alone, by two special trains, is not that staff again entitled to the same courtesy from the dozen or more lines terminating in New York City and vicinity?

"The six hundred surgeons in attendance at Old Point were pleased to see General Manager Stevens standing on the platform before them. His remarks were not lengthy, but they came direct from the heart of the speaker, and were appreciated by the surgeons. The management of the C. & O. had shown by its generosity and by the appearance of Mr. Stevens before the association that it appreciated railway surgeons and their work, and it was an ad. which did that line no particular harm. The general managers of eastern lines would do well to follow Mr. Stevens' example, by inviting the National Association of Railway Surgeons to convene in New York City, and by personally attending some of its sessions.

"We are decidedly too far behind the times. Perhaps more missionary work is necessary. Railway officials and surgeons of the East, are you doing your full duty to yourselves, to employes, and to your corporations? Is it right for us to remain quiet and allow railway surgery in the East to continue in this backward state?

"In 1891, when the call was made to organize the New York State Association of Railway Surgeons, we felled the first tree in the eastern forest of railway surgery. For five years we have continued our pioneer work in this line, ably assisted by our associates and members, but we are not satisfied to let the good work rest where it now stands. All along the work of our campaign has been one of education. Why? Because the situation required it. This is still the line to be followed. The gentlemen who compose the executive departments of our eastern lines are in need of more practical knowledge of railway surgery and of the relief and hospital department, and for that purpose we invite the coöperation of the national association in the form of an annual meeting to be held in New York City."

Dr. Chaffee knows exactly what he is talking about, and the good work which he and other friends of the National Association of Railway Surgeons are doing for railway surgery in the East must ultimately bring about a full and complete recognition of the value of organized surgical departments and a proper regard for the work which has been and is being done by the National Association of Railway Surgeons.

THE COMPLETE PROGRAMME.

The following is the complete programme for the coming meeting of the National Association of Railway Surgeons:

FIRST DAY—MORNING SESSION.

Tuesday, May 4, 10 a. m.

1. Opening of the Tenth Annual Conven-

tion, by the Chairman of the Committee of Arrangements.

2. Divine Invocation.
3. Address of Welcome.
4. Response to Address of Welcome.
5. Introduction of the President.
6. President's Address. By Frank J. Lutz, M. D., St. Louis, Mo.
7. Report of the Treasurer.
8. Report of the Secretary.
9. Report of Committee of Arrangements.
10. Miscellaneous Business.

FIRST DAY—AFTERNOON SESSION.

Tuesday, May 4, 2 o'clock p. m.

1. Reading of Minutes of Morning Session.
2. Report of Committee of Arrangements.
3. Report of Committee on Publication.
4. Report of Executive Committee.
5. Appointment of Nominating Committee.
6. Appointment of Judicial Committee.

PAPERS AND DISCUSSIONS.

7. The Treatment of Functional Nervous Affections Due to Trauma," by Dr. John Punton, Kansas City, Mo. Discussion to be opened by Drs. H. N. Moyer and H. T. Patrick.

8. "Relief and Hospital Departments," by Dr. Frank H. Caldwell, Waycross, Ga. Discussion to be opened by Drs. W. B. Outten and George Chaffee.

9. "Relation of Railway Companies to State Boards of Health," by Dr. G. P. Conn, Concord, N. H.

10. "An Exhibition of the Various Devices for the Determination of the Color Sense of Railway Employes," by Dr. C. W. Tangeman, Cincinnati, O. Discussion to be opened by Drs. John F. Fulton and J. A. White.

11. The Beneficial Influence Exercised by Railway Hospital Associations Upon the Morals of Employes," by Dr. Geo. W. Hogeboom, Kansas City, Mo.

12. "Accidental or Railway Surgery," by Dr. C. B. Stemen, Fort Wayne, Ind. Discussion to be opened by Dr. W. B. Outten.

13. Observations Upon and Reasons for a More Complete Physical Examination of Railway Employes," by Dr. Henry F. Hoyt, St. Paul, Minn. Discussion to be opened by Dr. W. D. Middleton.

SECOND DAY—MORNING SESSION.

Wednesday, May 5, 9 a. m.

1. Report of Minutes of Last Session.
2. Report of Committee of Arrangements.
3. Report of Special Committees.
4. Miscellaneous Business.

PAPERS AND DISCUSSIONS.

5. Treatment of Fracture of Humerus, Radius and Ulna, with Involvement of Wrist-Joint," by Dr. H. L. Getz, Marshalltown, Ia. Discussion to be opened by Drs. D. S. Fairchild and A. D. Bevan.

6. "A Case of Intercondyloid Fracture of the Femur," by Dr. F. W. Schmidt, Riverdale, Ill. Discussion to be opened by Drs. A. I. Bouffleur and A. L. Cory.

7. "Cardinal Principles in Amputations," by Dr. A. I. Bouffleur, Chicago, Ill. Discussion to be opened by Dr. J. B. Murphy.

8. "A Case of Osteo-Sarcoma from Railway Injury," by Dr. Rhett Goode, Mobile, Ala. Discussion to be opened by Drs. A. I. Bouffleur and L. Hektoen.

9. "The First Care of the Patient in Railway Traumatism," by Dr. A. L. Fulton, Kansas City, Mo. Discussion to be opened by Drs. W. B. Outten and W. A. McCandless.

10. "Plaster of Paris and the Difficulty of Applying it to Recent Fractures," by Dr. A. C. McClanahan, Red Lodge, Mont. Discussion to be opened by Drs. A. D. Bevan and Alton.

11. Hernia as a Factor in Personal Damage Suits," by Dr. John B. Hamilton, Chicago, Ill. Discussion to be opened by Drs. W. B. Outten and J. B. Murphy.

12. "Dislocation of Hip-Joint with Report of Cases," by Dr. Solon Marks, Milwaukee, Wis. Discussion to be opened by Drs. J. N. Jackson and J. B. Hamilton.

13. Wounds of the Neck," by Dr. F. W. Thomas, Marion, Ohio. Discussion to be opened by Drs. C. N. Kibbler and C. D. Evans.

14. "Amputations in the Lower Extremity, How and Where They Should be Performed," by Dr. W. R. Hamilton, Pittsburg, Pa. Discussion to be opened by Drs. W. P. King and S. S. Thorn.

SECOND DAY—AFTERNOON SESSION.

Wednesday, May 5, 2 p. m.

1. Reading of Minutes of Morning Session.
2. Reports of Special Committees.

PAPERS AND DISCUSSIONS.

3. Traumatic Infections and Their Treatment," by Dr. W. T. Sarles, Sparta, Wis. Discussion to be opened by Drs. H. F. Hoyt and A. I. Bouffleur.

4. "Vinegar in Surgery," by Dr. Evan O'Neill Kane, Kane, Pa. Discussion to be opened by Drs. W. S. Caldwell and A. L. Fulton.

5. "Tetanus," by Dr. J. E. Tefft, Springfield, Mo. Discussion to be opened by Drs. L. Hektoen and W. A. McCandless.

6. "Report of a Case of Fæcal Fistula; Successful Use of Murphy Button," by Dr. A. C. Wedge, Albert Lea, Minn. Discussion to be opened by Dr. J. B. Murphy.

7. Problems and Principles," by Dr. Jabez N. Jackson, Kansas City, Mo. Discussion to be opened by Drs. A. L. Fulton and E. F. Yancey.

8. "Our Problems," by Dr. Thomas H. Briggs, Battle Creek, Mich. Discussion to be opened by Drs. T. W. Miller and S. S. Thorn.

9. "Are We Too Hasty in Amputating in

Cases of Compound Fracture?" By Dr. W. S. Hoy, Wellston, Ohio.

10. "Antisepsis versus Asepsis in Accidental Surgery," by Dr. Jas. T. Jelks, Hot Springs, Ark. Discussion to be opened by Drs. J. B. Murphy and W. B. Outten.

11. "Traumatism of the Hand," by Dr. J. D. Milligan, Cincinnati, Ohio. Discussion to be opened by Dr. J. A. Barr.

12. "Drainage in Surgery," by Dr. W. S. Caldwell, Freeport, Ill.

THIRD DAY—MORNING SESSION.

Thursday, May 6, 9 a. m.

1. Reading of Minutes of Last Session.
2. Report of Committee of Arrangements.
3. Election of Officers: President, Secretary and Treasurer.
4. Report of Committee on Nominations.
5. Report of Judiciary Committee.
6. Selection of Place of Next Meeting.
7. Miscellaneous Business.

PAPERS AND DISCUSSIONS.

8. "Shock in its Relation to Permanent Injury," by Dr. Thos. O. Summers, St. Louis, Mo. Discussion to be opened by Drs. Rheet Goode and Davis.

9. "The Treatment of Shock," by Dr. Jas. H. Letcher, Henderson, Ky.

10. "Brain Abscess," by Dr. W. A. McCandless, St. Louis, Mo. Discussion to be opened by Dr. E. W. Andrews.

11. "The Treatment of Burns," by Dr. E. W. Lee, Omaha, Neb. Discussion to be opened by Drs. F. H. Caldwell and W. R. Hamilton.

12. "A Case in Practice," by Dr. A. L. Clark, Elgin, Ill.

13. "Medicine and Surgery and Their Votaries of To-day," by Dr. M. E. Alderson, Russellville, Ky. Discussion to be opened by Drs. E. R. Lewis and J. B. Murphy.

THIRD DAY—AFTERNOON SESSION.

A surgical clinic will be given by Dr. J. B. Murphy at Cook County Hospital, corner of West Harrison and Honore streets. Members should take "Harrison and Adams" street cars or "Van Buren" street, or "Ogden Ave." trailers on "Madison St." cable line to Honore street, or Metropolitan "L" cars to Ogden avenue.

The sessions of the convention will be held in the auditorium of the Medinah Temple, at the corner of Fifth avenue and Jackson street.

The Association headquarters will be at the Auditorium Hotel, at the corner of Michigan avenue and Congress street. The management offers a rate of $3.50 a day on the American plan and $1.50 a day European plan. The Victoria Hotel, corner of Michigan avenue and Van Buren street, offers a rate of $3 a day, American plan, and $1 a day, European plan.

REVISION OF THE CONSTITUTION.

At the request of the Executive Committee of the National Association of Railway Surgeons we publish again the revised constitution and by-laws, which will probably be adopted at the coming meeting:

CONSTITUTION OF THE NATIONAL ASSOCIATION OF RAILWAY SURGEONS.

ARTICLE I.

Section 1. The name of this Association shall be, "The National Association of Railway Surgeons."

Sec. 2. The object of this Association shall be to promote acquaintance and fraternal relations among railway surgeons, to secure interchange of ideas and adoption of the best methods of the development and improvement of railway surgery, and to establish it as a special branch of the chirurgical art.

ARTICLE II.

Section 1. The members of the Association shall consist of two classes, active and honorary.

Sec. 2. The active members shall be surgeons of railway companies at the time of their admission to membership, provided, however, that when a surgeon is once a member, his retirement from the service of the company shall not forfeit his membership.

Sec. 3. The honorary members shall comprise such persons, not necessarily railway surgeons, as may from time to time be elected, and accorded the usual privileges of such membership.

Sec. 4. All propositions for membership shall be made in open session, referred to the executive board, and on their report, elected by a two-thirds vote of the members present, provided, however, no report shall be made or election held on the same day of the session that the name is proposed.

ARTICLE III.

Section 1. The officers of this Association shall consist of a president, five vice-presidents, a secretary and an assistant secretary, a treasurer, also an executive board of seven. All of whom shall be elected annually by ballot, to serve until their successors are elected, except the executive board, four of whom shall be elected in even years and three in odd years.

Sec. 2. Nominations may be made at the morning session of the second day, limited to five for each office, and for the executive board to twice the number to be elected.

Sec. 3. The election shall be in order at

the opening of the afternoon session of the second day, a majority of all votes cast necessary to elect, and after the second ballot, if no election, all but the two receiving the highest number of votes shall be dropped, and the ballot confined to the two so designated. Of the executive board, a member receiving a majority shall be elected, until the number is full, the lowest being dropped on each ballot.

Sec. 4. All officers elected shall assume their several stations before the close of the morning session of the third day.

ARTICLE IV.

Section 1. The president shall preside at all regular and special meetings and perform all the other duties that custom and parliamentary usage may require, and deliver an address at the annual meeting over which he presides.

Sec. 2. In the absence of the president, the vice-presidents shall perform the duties of his office in the order of their election.

Sec. 3. The secretary shall keep a record of the proceedings of all meetings and draw all orders on the treasurer for the payment of bills, shall attend to all correspondence of the business of the Association, notify all members of meetings, and upon request of the chairman, give notice of meetings of committees during recess of the Association, and upon request of the president, shall issue such circular letters regarding the business of the Association as may be deemed desirable, and shall be ex-officio a member of the committee on arrangements.

Sec. 4. The treasurer shall have immediate charge of the funds and property of the Association, shall collect all dues, giving his receipt therefor, pay out money only on the order of the secretary, countersigned by the president, and shall give bond to the president to faithfully account for all funds coming into his possession belonging to this Association; the amount of the bond to be determined by the executive board. He shall also make a written statement to the president of the financial condition of the Association one month after the annual meeting. He shall communicate each year with all members who have not paid their annual dues and solicit payment of the same.

Sec. 5. The executive board shall fix the annual dues and membership fee, subject to the approval of the Association, and act as a committee on credentials, audit all accounts, and, in conjunction with the other officers of the Association, hold any necessary meetings in the interval between sessions deemed desirable and necessary in the interests of the Association, and such a conjoined action shall be deemed an action of the Association as a whole.

ARTICLE V.

Section 1. The standing committees shall consist of:

A Committee of Arrangements, five members.

A Committee of Transportation, three members.

A Committee of Necrology, three members.

A Committee of Publication.

The first three of whom shall be appointed and announced by the president before the adjournment of the final session.

Sec. 2. Special committees may be provided for at the pleasure of the Association.

Sec. 3. The committee on arrangements, a majority of whom shall be actual residents of the town or city in which the annual meeting next succeeding their appointment is held, provided there are that number of resident members, shall be required to provide suitable accommodations, including committee rooms, together with a list of hotels and rates per day; to receive and announce all essays, memoirs, and publish the title and name of the author of the same in the programme for the meeting, which programme shall be sent to all members entitled to seats in the annual meeting at least three weeks prior to the date of such meeting, and make any other necessary arrangements.

Sec. 4. It shall be the duty of the committee on transportation to ascertain the terms and conditions upon which the various railway lines will carry the members to and from the place of meeting, and to notify each member of the Association through the committee of arrangements, or otherwise, of the same at least one month prior to the annual meeting.

Sec. 5. The committee on necrology shall report annually brief biographical notes of the deceased members, and preserve statistical and other memorial records of the society.

Sec. 6. The committee on publication shall be composed of the president, secretary and treasurer, and shall have charge of preparing for the press such of the proceedings of the society as may be ordered to be published. And they shall have full discretionary powers to omit from the published transactions any part or whole of any paper that may be referred to it by the Association unless especially instructed to the contrary by the vote of the Association.

ARTICLE VI.

Section 1. The annual meeting of this Association shall be held between the first and last Mondays of May in each year, at the place agreed upon by the Association the preceding year, the particular date to be fixed by the executive board, and notice sent to each member of the Association not later than October

of the current year. The session shall continue three days, or until all the business of the society is completed and a formal adjournment had.

Sec. 2. Special meetings may be had upon the call of the president of the Association, signed by the secretary, at the request of a majority of the officers, or the executive board, and the business to be considered must be specified in the notification to be sent to each member of the Association.

ARTICLE VII.

The order of business at the annual meeting of this Association shall at all times be subject to the vote of two-thirds of all the members in attendance and until permanently altered, except when temporarily suspended. It shall be as follows:

1. Call to order.
2. Reading minutes of previous meeting.
3. Report of executive board.
4. Reports of committees and officers.
5. Nomination of officers, forenoon of second day.
6. Election of officers, afternoon of second day.
7. New business.
8. Report of cases.
9. Reading and discussing papers.
10. Unfinished business.
11. Adjournment.

ARTICLE VIII.

Section 1. The members present at any regular or special meeting shall constitute a quorum, and the majority vote decides all questions, unless otherwise provided for.

Sec. 2. The rules of conducting business shall in all cases, as far as they are applicable and not incompatible with the constitution of this Association, be those in Cushing's Manual.

ARTICLE IX.

Section 1. No report or other paper shall be entitled to publication in the journal for the year in which it shall be presented to the Association unless it is placed in the hands of the committee on publication on or before the first day of July.

ARTICLE X.

Section 1. Any active member who shall fail to pay his dues within four months after due, shall not be entitled to the journal, and if in default for two successive years shall be dropped from the roll of members, after having been notified by the treasurer of the pending forfeiture of his membership.

ARTICLE XI.

Section 1. Anyone appointed on a special committee who fails to report at the meeting next succeeding the one at which he is appointed, shall not be continued on such committee, or appointed on any other, unless a satisfactory excuse is offered.

ARTICLE XII.

Section 1. No amendments or alterations shall be made in any of these articles except at an annual meeting, when they shall be proposed in writing, laid over one day, and if not more than ten opposing votes, shall be adopted, otherwise they shall lie over until the next annual meeting, and then adopted only by two-thirds vote of all the members in attendance.

Eucaine in Minor Surgery.

Dr. Thomas Jefferson Yarrow Jr., resident physician, Episcopal Hospital, Philadelphia, writes as follows to the New York Medical Record:

The following is a brief report of the use of eucaine hydrochlorate in a series of thirty-five minor surgical operations, performed in the surgical dispensary of the Episcopal Hospital, Philadelphia, service of Dr. Adinell Hewson.

Method of using: A heat-sterilized aqueous solution of the drug was used, ranging in strengths from one and one-half to ten per cent. The field of operation having been thoroughly prepared, an aseptic elastic ligature was applied, and ten to thirty minims were slowly injected by a hypodermic syringe into and about the point of operation. The ligature was retained until the operation was completed.

One of the advantages that eucaine possesses over cocaine is that, while the latter drug is decomposed during heat sterilization, the eucaine is not, and retains its full anæsthetic power.

The aseptic ligature was applied, when possible, above the seat of operation, and in only two cases was any physiological action of the drug observed. These two cases had marked slowing of the pulse for about five minutes, the pulse being slow, full and strong, about 56 to 63 per minute.

Eucaine did not seem to produce ischæmia of the part, such as is observed during the use of cocaine. After the removal of ligature, free bleeding occurred in nearly all the cases immediately. In this it differs from cocaine, which by its vasomotor constriction often delays hemorrhage.

In conclusion: Eucaine may be used successfully in all of the minor surgical operations in which cocaine has been formerly employed. Eucaine appears to have advantages in that it can be rendered sterile in solution by boiling. Its physiological effects are slight, if any, when used in moderate quantities. There appears to be no throbbing pain after operation. In the average case, twenty minims of a four per cent solution are required to produce complete and satisfactory local anæthesia.

Notes of Societies.

The Central of Georgia Railway Surgeons' Association.

As we go to press the seventh annual meeting of the Central of Georgia Railway Surgeon's Association is being held at Macon, Ga. The following is the programme:

MORNING SESSION, 10 O'CLOCK.

PRAYER.

Reading minutes of last meeting.

1. Paper—"Aseptic Surgery in Railway Practice," Dr. J. D. Dasney, Birmingham, Ala.

Discussion by Drs. P. L. Hillsman, A. C. North, O. G. Singleton, H. A. Jones and G. R. Trimble.

2. Report—"Interesting Cases of Traumatic Surgery," Dr. A. K. Bell, Madison, Ga.

Discussion by Drs. M. G. Hatch, W. P. Ponder, J. A. Callaway, J. G. Dean and F. H. Bloodworth.

3. Paper—"Emergencies; Attention to Wounds and Primary Dressings," Dr. W. H. Philpot, Geneva, Ga.

Discussion by Drs. W. L. DesPortes, R. H. Taylor, C. L. Atkeson, J. A. Goggans, J. A. McKnown.

4. Report—"Some Interesting Cases of Traumatic Surgery," Dr. A. B. Bennett, Opelika, Ala.

Discussion by Drs. H. B. McMaster, W. T. Simpson, C. M. Pope, W. M. Bullard, B. R. Doster

5. Paper—"How to Prepare a Fractured Femur or Other Bone for Transportation," Dr. C. H. Richardson, Montezuma, Ga.

Discussion by Drs. W. B. Prather, L. E. Broughton, M. A. Baldwin, W. C. Bateman, H. P. Cooper.

AFTERNOON SESSION, 3 O'CLOCK.

6. Remarks—"The Use and Abuse of Adhesive Plaster," Dr. W. H. Elliott, Savannah, Ga.

Discussion by Drs. J. I. Darby, H. M. Hunter, W. H. Doughty, Jr., W. H. Rogers, E. B. Terrell.

7. Report—"Two Cases of Concussion of Brain," Dr. M. A. Clark, Barnesville, Ga.

8. Notes—"Two Cases of Laceration of the Brain," Dr. H. J. Williams, Macon, Ga.

Discussion of the two conjointly, by Drs. S. C. Benedict, L. L. Hill, W. L. Fitts, H. B. Disharoon, J. S. Baird.

9. Paper—"Contused and Lacerated Wounds—Their Treatment," Dr. W. H. Robertson, Clayton, Ala.

Discussion by Drs. W. H. Hudson, J. T. Mandeville, R. M. Butts, G. D. Paschal, R. F. Harper.

Treasurer's report.

Miscellaneous business.

Election of vice-president and secretary and treasurer.

Adjournment.

EVENING.

Musicale by the children of the Georgia Academy for the Blind, Concert Hall, Academy, half-past eight.

The Tri-State Medical Society.

The fifth annual meeting of the Tri-State Medical Society of Iowa, Illinois and Missouri was held in St. Louis, Mo., April 6, 7 and 8, 1897. The following is the programme:

April 6—Morning Session—10 a. m.

Call to order, by Dr. G. W. Cale, chairman Committee of Arrangements.

Address of welcome.

Response.

Reports of officers and committees.

Applications for membership.

April 6—Afternoon Session—1:30 p. m.

Dr. J. W. Fowler, Dubuque, "The Cause and Treatment of Epilepsy."

Dr. E. J. Senn, Chicago, "Gonorrhœal Synovitis."

Dr. Robert O. Cross, Kansas City, "The Treatment of Pulmonary Tuberculosis by the Hypodermic Method."

Dr. H. H. Vinke, St. Charles, Mo., "Presentation of a Cretin—Remarks on Treatment with Thyroid Extract."

Dr. A. C. Klebs, Citronville, Ala., "The Necessity of Special Institutions for the Treatment of Pulmonary Tuberculosis."

Dr. J. K. Bauduy, St. Louis, "Unconscious Cerebration."

Dr. W. Scheppegrell, New Orleans, "The Collapse of the Nasal Alæ as an Etiological Factor in Diseases of the Respiratory Passages."

Dr. O. Beverly Campbell, St. Joseph, "A Plea for the Early Recognition and Operative Treatment of Cancer of the Uterus."

Dr. C. E. Ruth, Keokuk, "Talipes Equino-Varus, Surgery of."

April 6—Evening Session—8 p. m.

President's Address, Dr. A. H. Cordier, Kansas City.

Dr. Alexander Hugh Ferguson, Chicago, subject unannounced.

Dr. J. M. Allen, Liberty, Mo., "Serum Therapy, with Report of Cases."

Dr. F. B. Dorsey, Keokuk, Ia., "Ventrofixation of the Uterus—Report of Cases."

Dr. F. Reder, Hannibal, "Lumbago."

Dr. Paul Paquin, St. Louis, "The Limits of Sero-Therapy."

April 7—Morning Session.

At City Hospital, Seventeenth and Pine streets.

9 a. m.—Medical clinic, Dr. Jas. T. Whittaker, Cincinnati.

10:30 a. m.—Surgical clinic, Dr. Joseph Price, Philadelphia.

April 7—Afternoon Session—1:30 p. m.

Dr. W. F. Waugh, Chicago, "Some Phases of Narcomania."

Dr. Thomas H. Manley, New York, "The Morbid Anatomy of Inflammatory and Degenerative Diseases of the Peripheral Veins."

Dr. Carl Theodor Gramm, Chicago, "The Mouths of our Schools Children."

Dr. Allen Staples, Dubuque, "Some Clinical Notes on Vaginismus."

Dr. Charles W. Purdy, Chicago, "The Management of Chronic Bright's Disease."

Dr. J. M. Black, Knoxville, "Surgery of the Gall-Bladder, with Report of Cases."

Dr. Donald Macrae, Jr., Council Bluffs, Ia., "Report of a Case of Echinococcus of the Liver, with Rupture of Gall-Bladder."

Dr. R. E. Farris, Anna, Ill., "Malpositions of the Uterus and Ovaries; their Influence in Functional Disorders of the Heart and Digestive Organs."

Dr. J. A. Close, St. Louis, "Urinalysis."

Dr. Emory Lanphear of St. Louis, "Treatment of Septicemia by Subcutaneous Medication."

Dr. John Punton, Kansas City, "The Relation of the Science of Medicine to Public School Education."

Dr. S. S. Davis, Fulton, Mo., "La Grippe and its Sequelæ."

Dr. Wm. Porter, St. Louis, "An Additional Means of Diagnosticating Aneurism of the Thoracic Aorta."

Dr. David Lieberthal, Chicago, "About the Treatment of Skin Diseases."

Dr. Ohmann-Dumesnil, St. Louis, "Presentation of a Case of Addison's Disease."

SMOKER.

April 7—Evening Session—8 p. m.

Dr. G. Frank Lydston will entertain the society on the evening of the 7th with "An Original Doctor's Story, with Plenty of Points."

April 8—Morning Session at City Hospital.

9 a. m.—Ophthalmic clinic, Dr. Dudley S. Reynolds, Louisville, Ky.

Dr. J. Mount Bleyer, New York, will demonstrate the use of the fluoroscope in diseases of the lungs.

Dr. Fenton B. Turck, Chicago, will read a paper on "Olegocythæmia and Leucocytosis in Gastro-Intestinal Diseases, with Methods of Treatment." Demonstrations.

Prof. Edwin Klebs, Chicago, will give a pathological demonstration.

April 8—Afternoon Session—2 p. m.

Dr. Wellington Adams, St. Louis, "A New and Practical Method of Opening and Dilating the Eustachian Tube."

Dr. J. R. Pennington, Chicago, "The Necessity for a More Careful Examination of the Rectum in Chronic Diseases."

Dr. J. C. Spohn, St. Louis, "Lymphadenoma; Its Differential Diagnosis and Treatment Illustrated by the Report of Two Cases."

Dr. H. C. Finch, Lynnville, Ia., "Convulsions Following Labor" (remote).

Dr. G. F. Hulbert, St. Louis, "The Treatment of the Stump in Hysterectomy and Hystero-Myomectomy."

Dr. J. Block, Kansas City, subject unannounced.

Dr. H. C. Dalton, St. Louis, "A Case of Strangulated Inguinal Hernia—Resection of Intestine—Recovery."

Dr. D. C. Brockman, Ottumwa, "Pancreatic Cysts."

Dr. G. Wiley Broome, St. Louis, "The Pathology of Malignant Disease."

Dr. J. O. DeCourcy, St. Libory, Ill., "Malaria."

Dr. E. H. McCullers, St. Louis, "Certain Morphological Characteristics of Nervous Prostration, and their Treatment by Mechanico-Therapeutics."

Dr. G. M. Phillips, St. Louis, "Physiological Copulation."

Dr. S. G. Gant, Kansas City, "The Pathology, Etiology, Symptoms and Treatment of Rectal Polypi."

Dr. James Moores Ball, St. Louis, "Traumatic Cataract."

Report of treasurer.

Election of officers.

Selection of place of meeting.

Adjournment.

Values a Laborer's Leg at $15,000.

The appellate division of the supreme court of New York holds, in Tully vs. New York & Texas Steamship Company, December 1, 1896, that $25,000 is too much to allow for the loss of a leg to a person twenty-eight years of age, presumably in good health and strong, but who has no established business, and earned about $12 a week at such employment as he could obtain; yet it holds that $15,000 would not be out of the way.—Journal of the A. M. A.

Extracts and Abstracts.

Cases of Rupture of the Quadriceps Extensor Tendon Treated by Suture.

By Andrew J. McCosh, M. D., of New York City.

A rupture of the quadriceps extensor tendon is not a rare accident, neither should its diagnosis be difficult, and yet from a perusal of reported histories of such cases the impression is received that in many of them the injury was overlooked, because the examining physician was not alive to the possibilities of such an accident. In these cases it is of the utmost importance that appropriate treatment should be at once begun. What treatment shall be adopted? Shall it be rest in bed with the elevation of the limb, etc., or shall it be an operation for suture of the divided tendon? There are certainly many cases where surgical treatment is not needed, but, on the other hand, in the majority of cases, when complete rupture has occurred, either above or below the patella, the results from non-operative treatment are far from satisfactory. This is especially so when the rupture is above the patella. In forty such cases, collected by Maydl, there was complete recovery in 60 per cent. only, and in the twenty-three cases collected by J. B. Walker in 70 per cent. Contrast with this the final result after suture in the twenty-one cases collected by Walker with complete recovery in 90 per cent. Such operations, however, are not devoid of risk, and while so far no disastrous results have followed it must not be forgotten that the majority of these patients have been under the care of surgeons of skill and experience. It is only by such men that the operation should be attempted, and if the proper conditions for an aseptic operation do not exist, it is probably wiser to adopt, for a time at least, a non-operative plan of treatment. Should this fail, the suture can be done at some later date, when the surroundings are more favorable for a successful issue.

When shall the operation be performed?

The most favorable time is probably at the expiration of five or six days after the injury, when the acute stage of the joint hyperæmia has subsided. While a delay of several weeks does not seem to be advisable, yet it does not contraindicate the operation. In the three operations here recorded, a delay of eight weeks in the first case did not interfere with a perfect recovery, while in the second case a similar delay seemed to influence in a slight degree the final result.

Case I: M. McG., aged nineteen years, admitted March 15, 1894. Seven weeks ago fell down a flight of stairs, the left knee being forcibly hyperflexed under him. He was able to walk home. On the following day the knee became swollen and painful. He sought treatment in a dispensary, where the diagnosis of sprain of the knee was made. After this he walked to the dispensary twice weekly for treatment, which consisted of a bandage and counter-irritation. Unable to work on account of pain and disability. On examination there was found to be complete separation of the quadriceps extensor tendon from the superior border of the left patella, the distance being one and a half inches. Two fingers pressed into this space could clearly feel the anterior surface of the trochlea and the condyles of the femus. Flexion at knee unimpaired, but almost complete loss of extension. Slight swelling and tenderness of joint. End of tendon felt to be thickened.

Operation March 20; fifty-five days after accident; ether. Vertical incision, six inches long, at once entered the joint and exposed the lower part of the tendon and the patella. End of tendon decidedly thickened and hard, as if there had been a deposit of bone. The ragged and hardened end of the tendon trimmed off, as likewise border of the patella. The tendon had been torn directly from its point of attachment to the bone, probably pulling off with it some of the periosteum, so that no part of the tendon remained attached to the patella. The lateral expansions, however, were only partially torn off. Joint contained a few small partially-organized blood-clots and some fluid, but was comparatively clean. Irritation with hot salt solution. Three small openings were drilled through the upper end of the patella, into which and then through the entire thickness of the tendon were passed silkworm-gut sutures. Synovial membrane and the lacerated portions of the lateral expansions sutured with catgut, silkworm sutures tied, and incision closed by silk sutures without drainage. Plaster-of-paris splint, the limb being hyperextended. On the following day considerable pain. April 6, temperature has not reached 100 degrees F. since operation; splint removed; primary union; sutures removed; patella freely movable laterally; new splint.

April 23: Fenestrum cut in splint and daily massage. Patient out of bed May 5; splint removed; passive motion; a few adhesions felt to snap. May 23: Discharged cured. No stiffness; rapidly regaining power of extension. May, 1896: Reports that one leg is as good as the other; no disability; no pain; extension and flexion perfect.

Case II: Rupture of Quadriceps Extensor Tendon of Each Knee.—C. J. K. aged fifty-

two years. A short, heavy man, who has always been an awkward walker, fell down stairs on June 17, 1896, the right knee being flexed under him; felt something break, but was able to rise and walk. Injury followed by some pain and swelling. His physician called it a sprained knee. Patient able, with great effort, to attend to his business as clerk, walking with the aid of crutches. On July 17, while hurrying to cross the street, fell and felt a snap in his left knee. He could not rise. With assistance he was helped to a carriage and taken home. Admitted to hospital on July 18. On examination is felt a depression, admitting two fingers between the superior border of the patella and the end of the quadriceps extensor tendon. Between these was felt distinctly the trochlea of the femur. Considerable swelling of knee; slight tenderness; flexion good, but extension absolutely lost. Examination of right knee reveals a similar condition, though with more exudation in the joint.

Operation July 23; ether. A curvilinear incision, concavity downward, was made across the left limb about one and a half inches above the superior border of the patella and directly over the end of the tendon; tissues œdematous and infiltrated with blood. Joint at once opened and found filled with blood-clots, shreds of tissue, and synovial fluid. Irrigated with salt solution. Rupture through the tendon found to be a transverse one for the most part, about half an inch above its point of attachment to the patella, the tear being ragged, a strip some three inches long having been torn from the anterior layer of the tendon and remaining attached to the patella. The lateral expansions were almost completely torn off, small shreds being left attached to the sides of the bone; the gap between the patella and the end of the tendon measured one and a half inches; persistent irrigation needed to remove the clots and shreds of tendon; ends of tendon trimmed off by scissors, the tongue-shaped strip being removed with the exception of a half inch at its base. After the trimming there remained one-third of an inch of tendon attached to the patella; a double strand of silk was then passed through each end of the entire thickness of the tendon and at the patellar attachment through the edge of the bone itself; a suture of chromicized catgut was then passed on each side of the silk suture through the tendon, but without piercing the bone.

After thorough irrigation the lateral and anterior expansions were united by catgut sutures and the three tendon sutures tied. The fascia was united by catgut and the skin by silk sutures; no drainage. As a result of the curved incision the line of skin union was situated one inch superior to the line of union in the tendon.

Right.—A similar incision opened directly into the joint, which was filled with blood-clots and synovial fluid. The rupture of the tendon was a transverse one, directly at its point of attachment to the patella. Laceration of the lateral expansions less extensive than in the left joint. Separation between superior border of patella and end of tendon one inch and a quarter. End of tendon trimmed off and border of bone freshened. As no part of the tendon had been left attached to the patella, a hole was drilled through the upper part of the bone and a double strand of silk passed through this and through the end of the tendon. Suturing completed as on left side. Considerable force was needed to approximate the end of the tendon to the patella. Plaster-of-paris splint from ankles to upper part of thighs; for forty-eight hours considerable pain; afterward patient comfortable; temperature never rose to 100 degrees F.

August 6: Fenestrum cut in splint; primary union; sutures removed; patella movable laterally, the right less freely than the left. August 12: Massage to each knee daily. August 18: Splints removed; passive motion ordered; comfortable flexion to fifty degrees in each knee. August 25: Walks about with aid of crutches; flexion of right knee somewhat limited.

September 2: Discharged cured; walks unaided; flexion and extension of left knee perfect; flexion of right to 90 degrees only; extension perfect.

November 15: Patient walks almost as well as ever; slight limitation to flexion of right knee; flexion and extension of left knee perfect.—Annals of Surgery.

Metallic Silver and Silver Lactate and Citrate in Surgery.

At a recent meeting of the Dresden Gesellschaft für Natur-und Heilkunde, as we learn from the Deutsche Medizinal-Zeitung for March 26, Dr. Credé gave the results of his investigations of silver and some of its salts as antiseptics. He has satisfied himself that metallic silver, when brought into contact with colonies of schizomycetes, kills them without exerting any unfavorable action on the animal tissues. So it may be remarked that the late Dr. Marion Sims' choice of silver wire as a material for sutures was happier than could be realized at the time. Credé says that aseptic wounds coated with silver foil remain aseptic for weeks at a time, and heal better than with any other dressing. Instead of silver foil, he has lately employed a dressing material made by Max Arnold of Chemnitz, in the fabric of which metallic silver is intimately blended in such a manner as to

admit of its being cut or torn into any shape desired. There is also a dressing in the form of a mull containing powdered silver that may with advantage be substituted for iodoform gauze in packing deep wounds.

Numerous experiments have shown that silver forms a lactate with the lactic acid produced in the metabolism of the micro-organisms and that this compound kills them. Therefore it occurred to Credé to make direct use of silver lactate, instead of silver in the metallic state. This preparation, known by the trade name of actol or aktol, he thinks fulfills all the requirements of an antiseptic better than any other. He has given as much as fifteen grains of it subcutaneously without the least ill effect; there was only a slight burning pain at the site of the injection, lasting for but a few minutes. Silver lactate forms no insoluble compounds with the alkaline secretion of a wound or with tissue juice, as, for example, corrosive sublimate does, but only soluble ones, which gradually permeate the tissues and thus extend their action to some distance from the surface.

Silver citrate, however, seems to be quite as efficient and to be free from some minor disadvantages (not specified) of the lactate. The citrate has the trade name of itrol. Credé says that it is a perfectly harmless antiseptic and an excellent dusting powder for wounds. In the course of four months he has treated many hundreds of wounds with it, and with never the least untoward effect.—N. Y. Med. Journal.

The Cause of Death Following Burns.

Ajello and Parascandolo conducted numerous investigations concerning the death after burns, and conclude that the deaths are caused by toxic ptomaines. Death is not due to the toxin of the bacterium proteus, nor to any anatomical changes which the blood or burnt parts may suffer. The ptomaines of burnt organs are the same when the organ is first removed from the body and then burnt. Healthy animals inoculated with this die with the same symptoms as burnt animals. Death after burning is therefore due to the absorption of ptomaines produced by chemical changes in the tissues due to burns. The immediate removal of the burnt part prevents this absorption, and consequently all specific symptoms of the burn and death. The same objects may be attained by venesection and the immediate transfusion of healthy blood or artificia serum.—Gazz. degli Oppedali e delle Clin., No. 83, 1896; Centralblatt für innere Medicin, No. 51, 1896.

Notes, News and Personals.

Dr. Nicholas Senn will deliver the "Address on Surgery" at the Twelfth International Medical Congress, to be held in Moscow in August.

A railway and navigation sanitary conference will be held in Brussels in September. The secretary is Mr. M. J. de Lantsheere, Rue de l'Association, No. 56, Brussels, Belgium.

At the recent meeting of the Tri-State Medical Society, held in St. Louis, Dr. Emory Lanphear, Ph. D., LL. D., of St. Louis, was unanimously elected president for the ensuing year.

Dr. Nicholas Senn has purchased the entire library of the late Professor Du Bois Reymond and has presented it to the Newberry Library in this city. The collection consists of about 14,000 volumes, largely devoted to physiology.

At the annual meeting of the Chicago Medical Society, April 5, the following officers were elected for the ensuing year: President, Dr. Fernard Henrotin; vice-president, Drs. Arthur D. Bevan and Junius C. Hoag; treasurer, Dr. Arthur R. Reynolds.

The following addresses will be delivered at the meeting of the American Medical Association in Philadelphia the first week in June: Presidential address, by Dr. Nicholas Senn of Chicago; "Address in Surgery," by Dr. William W. Keen of Philadelphia; "Address in Medicine," by Dr. Austin Flint of New York; "Address in State Medicine," by Dr. John B. Hamilton of Chicago.

The College of Physicians and Surgeons of Chicago has recently become a medical department of the University of Illinois. This alliance should strengthen an already vigorous medical college and must also be a good thing for the State University. We trust that the result will be still better work on the part of the College of Physicians and Surgeons, which has graduated some of our best physicians and which numbers among its teachers men of international reputation.

The twenty-sixth congress of the German Surgical Society will be held in Berlin on April 21 and three following days, under the presidency of Professor Bruns. The questions proposed for discussion are: 1. The surgical treatment of gastric ulcer. 2. The use of the Roentgen rays in surgery. 3. The operative treatment of hypertrophy of the prostate. A report on the collective investigation now being prepared on anæsthetics throughout Germany will be presented.

Notices and Reviews.

Intercollegiate Medical Journal.

We have just received the initial issue of the Intercollegiate Medical Journal, which is to be published every second month and is the official organ of the Nu Sigma Nu Fraternity. It is edited by Drs. F. Gurney Stubbs and Will Walter of Chicago, with the co-operation of a number of editors in the various college towns elsewhere.

The following abstract from the Salutatory indicates the scope and field of the new journal:

"The official organ of the fraternity, it seeks through a scope enlarged beyond the usual confines of a society journal, to fill its proferred space with views of the study of the medical sciences from general standpoints to the exclusion of case reports, to devote many of its pages to methods of teaching and considerable space to post-graduate work at home and abroad—subject matter of interest more nearly in like measure to its subscribers."

We believe that there is a field for such a journal and wish it the success which is its due. The mechanical execution of the journal is excellent.

BOOKS AND PAMPHLETS RECEIVED.

"Introductory Clinical Lecture," by L. Webster Fox, M. D. Reprinted from the New England Medical Monthly, December, 1896.

"Ophthalmia Neonatorum," by L. Webster Fox, M. D. Reprinted from the Medical Council, February, 1897.

"The Chicago Lying-In Hospital Dispensary." Second annual report, 1896-97.

"The Philadelphia & Reading Railroad Relief Association." Eighth annual report for the year ended November 30, 1896.

Sixteenth annual report of the Illinois Training School for Nurses, 1896-97.

"Regulations Governing the Philadelphia & Reading Relief Association." Edition of February, 1897.

"The Pathology of Unintentional Abortion," by Karl F. M. Sandberg, M. D. Reprinted from the American Gynæcological and Obstetrical Journal, February, 1897.

"Four Cases of Thiersch's Skin-Grafting for Pterygium," by F. C. Hotz, M. D. Reprinted from the Annals of Ophthalmolgy, Vol. vi., No. 1., January, 1897.

"Report of a Case of Sporadic Cretinism or Infantile Myxoedema," by James B. Herrick, M. D. Reprinted from Archives of Pediatrics.

"Tricuspid Stenosis with Reports of Three Cases with Autopsies, together with Abstracts of Forty Cases Reported since Leudet's Thesis (1888)," by James B. Herrick, M. D. Reprinted from the Boston Medical and Surgical Journal, March 18, 1897.

"A Synopsis of the Practical Work in Ophthalmoscopy and Refraction at Rush Medical College," by Cassius D. Wescott, M. D. Reprinted from The Corpuscle, March, 1897.

"Subconjunctival Injections in the Treatment of Certain Diseases of the Eye," by William H. Wilder, M. D. Reprinted from Medicine, December, 1896.

Miscellany.

A Case of Dermatitis from Exposure to X-Rays.

In the February number of the Scottish Medical and Surgical Journal Prof. E. Weymouth Reid, of Dundee, relates the following case which occurred in his own person: Having to deliver a lecture on Röntgen's discovery he wished to obtain a photograph of his own chest and abdomen through the clothing, to exhibit the contents of the pockets in addition to the skeletal structures. The exposures to which he was subjected were as follows: The abdomen, on November 2, twenty minutes, followed by another exposure of forty minutes. The chest, on November 3, fifty minutes, followed two days later by an exposure of ninety minutes. The coil was of ten-inch spark fed by ten amperes, and the Crookes tube ("focus" pattern) was some three inches from his waistcoat as he lay upon the table.

On the evening of each exposure marked erythema of the skin on the abdomen and chest was noticed immediately beneath the position of the vacuum tube, and, in addition, slight redness of the skin of the back over an area corresponding to the exit of the rays from the body. The Professor at once began to rub in lanolin and continued to do so for the next twelve days.

Vesicles soon appeared, continues the author, and gradually coalesced, so that by fourteen or fifteen days the cuticle was loose. On the back vesicles also were formed, but soon subsided.

By seventeen days the cuticle began to peel off, leaving a surface exactly like that seen when the cuticle was rubbed off a dissecting-room subject, except that it was of a bright red color. The peeling of the skin of the chest, in correspondence to its time of ex-

posure, was about two days later than that of the abdomen.

The surface left was "raw" and "weeping," but not very painful. It was kept well dusted with powdered talc and protected from the friction of the clothes by a pad of wadding.

The author states that the discharge next became sero-purulent, and that he had now lost some thirty square inches of cuticle, and must have been daily losing considerable amounts of albumin in the discharge, and it was with difficulty that he attended to his laboratory duties.

However, by twenty-seven days the surface was dry, and in thirty-three days quite healed.

On January 11, 1897, there was no vestige of hair left upon the chest, and he has not been troubled with the shaving of his chin for the last six weeks, the hair having come out by the bulbs to the touch of the razor twenty-two days after the chest exposure, after a slight preliminary erythema of the skin not followed by loss of cuticle.

The time of the appearance of the symptoms in this case, he says, agrees fairly closely with that observed in two cases reported by Dr. Drury and Dr. Radcliffe Crocker.

In Dr. Drury's case there were vesicles on the tenth day after the first exposure (fourth day after second exposure), and there was a profuse discharge by the twenty-fourth day (the eighteenth day after the second exposure). The skin, however, was not sound sixteen weeks later, a fact possibly associated with the state of the health of the patient (kidney affection). In Dr. Crocker's case vesicles were seen on the eighth day, the epidermis began to separate on the fourteenth day, and peeling was complete by the eighteenth day. The skin was not sound sixty-seven days after the exposure.

The fact that about a week elapses before any serious symptoms of dermatitis appear, he says, suggests that the surface cells are destroyed by the rays, and that the inflammatory phenomena are associated with the removal of necrosed tissue.

The author thinks it possible that the early application of the skin's natural fat may have had something to do with the fact that he was well in a month.

The interesting point, he thinks, is the apparent immunity of structures deeper than the skin, for, although he had a sore on his chest and pimples on his back, his lungs, so far as he knows, are not affected. It is conceivable, he thinks, that this may be connected with the fact that the gas mixture in immediate contact with the skin is richer in oxygen than that in the pulmonary alveoli, and that the rays produce "active" oxygen, which is capable, when present in sufficient amount, of destroying the cells, were it not that there is no evidence that the X-rays do produce "active" oxygen.

Skin structures, continues Professor Reid, and possibly the conjunctiva, at present appear to be the only tissues on which action has been noticed. Passage of the rays for an hour through the head of a boy of medium intelligence did not, in his hands, cause deterioration or improvement thereof.

Dr. Crocker, he says, makes the suggestion that as a prophylactic workers with these rays might wear red cloth gloves or coat their hands and face with red paint, which could easily be washed off, but he adds that the waistcoat within which he suffered was lined with scarlet flannel.—N. Y. Med. Journal.

Libel and Slander as Affecting Physicians.

Henry Leffman contributes to the Philadelphia Polyclinic of January 30, 1897, a syllabus of the law relating to this important subject: Libel consists in the utterance of any communication otherwise than by oral speech unjustifiably accusing private individuals, officials or governments of anything tending to make them ridiculous or injure them in reputation or public etseem. Slander is an oral statement unjustifiably accusing a person of a crime, a loathsome disease, incapacity, or dishonesty, or of any fault which tends to injure the person or his business. The courts have decided that an accusation may be slanderous or not according to the vocation of the accused. To accuse a physician of general professional ignorance or malpractice is actionable per se, but to state that in a special case he was at fault is not slanderous, unless special damage is proved. A retired physician, since he no longer gains his living by his profession, may be accused with impunity of what would "slander" a man in actual practice. Slanderous words uttered in one state may not be actionable in another state unless proved to be so also in the place uttered. A person uttering slander to a second party who repeats it to the detriment of an individual may escape responsibility if the damages result from the utterance of the second party and not from that of the originator. In case of libel, any accusation holding a person up to scorn or ridicule, whether professionally or as a private person, is actionable. A physician who attempts to achieve notoriety by puffing himself cannot recover damages from those who further his attempts. It is slander to falsely attribute a contagious disease to a person, unless a statement was necessary and there was a mistaken diagnosis. A physician condemning any article used in medical practice is liable to the manufacturer, if the said physician's statement be incorrect.

THE Railway Surgeon

VOL. III. CHICAGO, MAY 4, 1897. No. 25.

A CASE OF COMPOUND COMMINUTED FRACTURE OF BOTH LEGS.*

BY J. H. MILLER, M. D., PANA, ILL.

On the morning of March the 11th, 1887, I was called to attend J. O. R., a farmer who had

received a compound, comminuted fracture of both legs by having them caught in a hay press. Instead of feeding his press in the usual way, he was in the habit of filling the receptacle with hay and jumping in, and with both feet pressing the hay down in order that the plunger might carry it into the cage which gives size and shape to the bale, trusting to his nimbleness for the safety of his legs. In his case the pitcher went to the well once too often. Both legs were caught between the plunger and the edge of the cage with a two horse power pressure. The horses were checked before the full pressure was applied, otherwise the man's feet would have been torn off. As it was, there was a compound, comminuted fracture of both legs, beginning about an inch above the malleoli and extending upward four inches. For this space the bones of both legs were completely crushed, the fragments having penetrated the soft parts in a number of places. The right leg was much the worse and it was no trouble to turn the foot until the toe would point directly backward. A number of the smaller vessels were wounded and the hemorrhage had been con-

* Read before the Association of Big Four Railway Surgeons, at Indianapolis, Ind., Nov. 10, 1896.

siderable. Fortunately the larger vessels were intact. The patient was informed that there would be no difficulty in obtaining a good result in the case of the left leg, but an effort to save the right leg might result disastrously. He was very anxious to have the effort made and agreed to hold me blameless in case of failure.

In order to divide the responsibility I sent for a neighboring surgeon, who, on inspection of the injury, decided that an amputation was absolutely necessary. After stating the patient's proposition to him he decided to join me in an effort to save the limb. The left leg was put up in the ordinary lateral splints with a light splint anteriorly and posteriorly, and gave us but little trouble. The right leg was put on a double inclined splint that had been carefully padded. The foot was bound to the foot-piece and the leg to the splint, an opening being left through which the wounds might be dressed. For the first week there was considerable pain, but after that time he suffered little. The wounds of the soft parts healed kindly and at the end of ten weeks the left leg had so far recovered that he could bear his weight upon it. The right leg was swollen, but otherwise seemed in good condition, so I put it in a plaster dressing and allowed the patient to take moderate exercise on crutches. By observing the photographs you will notice on the right leg, about five inches above the ankle, a slight bending of the bone from before backward. This marks the point to which fracture extended above.

This slight angle is evidently responsible for two conditions remaining as a result of the fracture. The gentleman informs me that after walking all day the "heel string" in this leg feels as though it were a little short. He has also noticed that he stumbles more frequently with this foot than with the other, a condition evidently brought about by a slight relaxation of the tendons, due to the bending of the bone backward. It will be noticed that as he stands, the great toe especially has a tendency to drop down. The above slight deformities, with an enlargement two inches above the inner malleolus of the right leg, and a few scars where the soft parts were penetrated by pieces of bone, are all the evidence we have of the ordeal through which this patient passed. He is strong and reasonable active, occasionally plays baseball and informs me that he can do as much work in a day as before the accident, with the exception of putting hay in a press, a work which he now does in a slower but safer way. When I first viewed this limb I presumed there might be one chance in a hundred of saving it. I am doubly thankful we took the one chance.

41 S. Locust street.

FIRST ATTENTION THE AUTOCRAT OF FINAL RESULTS.*

By J. L. Wiggins, M. D., E. St. Louis, Ill.

The story of the newly arrived Hibernian who refused to pick up a silver dollar which he saw lying in the street because he had been told that in America five-dollar gold pieces were as thick as blackbirds in a meadow, finds his prototype exceptionally plentiful in the medical profession. The tendency of our profession is to ignore small injuries which do not threaten the life of the individual, or too markedly interfere with his comfort, and trust too much in the reparative power of nature to bridge chasms and overcome deformities unguided by the hand of man, who, from special education and experience, has opportunities to learn methods by which natural repair can be assisted. I do not mean that the majority of physicians wilfully ignore certain stereotyped rules which they have perfected after a more or less rigid apprenticeship in the school of experience, but I do mean that after certain methods have proven in a manner satisfactory in their hands, there seems to be an arrest of development, lack of desire to further advance or incorporate new and improved ideas. There seems to be a line of demarkation between our treatment and preparation in minor and major surgery. When the higher stratum is reached, every sense is quickened and every opportunity embraced, either by study or observation, to reach the higher point of perfection. A man will travel hundreds of miles to see how Jones ties a knot and Smith makes his initial incision, and think himself well paid in catching one new idea. If you gentlemen will permit your memories to carry you back over your experience in medical societies, and at the same

*Read before the Association of Big Four Railway Surgeons, at Indianapolis, Ind., Nov. 10, 1896.

time scan your journals, it will surprise you to find the great amount of space and time which has, and is, being devoted to those operations which not one physician in one thousand ever has to perform, and how little attention is given to those known as minor injuries which daily fall to the lot of the general practitioner.

The presumption is that every physician is competent to clasp hands with nature, interpret her signs and aid her efforts, but is this presumption proven by results? Are not half the cases followed by deformities, traceable to our own incapacity? If we should do our full duty in all cases, would not the dockets of our courts be less burdened with suits for damages against individuals or corporations under the general head of permanent disability? Is there really any injury which we can classify as being simple—that is, is there any injury so slight that a careful aseptic and antiseptic first attention can be ignored with safety to the patient or credit to the surgeon? We have all seen illustrations of the results of carelessness in these simple cases. Two of them occur to me at present. One a slight abrasion on the cheek caused by falling in alighting from a car. The injury was so slight that had it not been that the rules of the company for which he worked made it obligatory, the man would have sought no medical advice. As it was, the physician barely glanced at the injury and sent the patient home. Perhaps none of us would have done differently. A few days later I was called to see case. Erysipelas had been contracted and continued to spread, involving head, neck and chest. The case terminated in death.

The other case was one of contusion in the palm of the hand. Abscess resulted and after great damage had been done by aglutination of tendons a slight puncture was made. The inflammation extended, necrosis of the soft parts occurred, and the hand had to be sacrificed. These may be extreme examples of cases of this kind, but the bare possibility of such cases occurring should make us doubly careful in all cases. Let us take the first case. Suppose the abraded surface had been cleansed with some simple wash—Thirsch's or normal salt solution, covered with gauze and absorbent cotton and sealed with collodium. Does anyone here think we would have had the above result? Again, in second case, suppose a free incision had been made and the cavity packed with gauze, and proper drainage provided after antiseptic or even simple irrigation. Would not the individual have retained his hand and the community have escaped the penalty of a possible dependent?

Of course, after certain conditions have been provoked, any and all treatment proves unsatisfactory. I hold that no matter how advanced or appropriate after treatment may be, initial, or first, attention, will govern results. The knowledge, reputation or opportunity of any surgeon does not absolve him from the penalty visited upon all who violate the basic principles of modern surgery. He must suffer in common with his victim. The charge that medicine is not an exact science loses its force when applied to the department of surgery. Starting with a certain condition we all know if we violate no rule either by omission or commission ordinarily certain results will follow. Following this line of thought we are led to ask in what manner is a man influenced in permitting himself to be led in error. In answer I would venture the assertion that the greatest obstacle most men have to contend with is that of habit encouraged by a spirit of laziness. If we subject humanity to a careful analysis we will find that the animal nature in man finds no greater surface indication than in that proclaimed by the force of habit. By daily devotion at this shrine, the physician more than all men creates a code which, right or wrong, becomes an index in all cases which experience has been the teacher. It is useless to argue the case. Common sense theories are combated with reported successes by means untenable and almost prehistoric and mechanically all of us follow certain lines unguided by reason, simply because our environments have been such as to encourage the formation of a fixed code, or because the broadening influence of association has not permitted unprejudiced comparison. Let us take as an illustration a point with which we are all familiar: Twenty years ago we were taught that in wounds, when possible, the finger was the only reliable means for exploration; that fact still remains. Later on we were taught that the finger must be thoroughly aseptic, otherwise more harm would be done by infection

than would be balanced by the information gained. Yet the latter instruction, although more valuable than the first, is still by many unhonored in its observance.

If habits, environments and associations have such an influence upon our successful treatment of cases, it would seem that it would be profitable to direct our attention to means whereby habits and other conditions may be turned to our advantage rather than to our detriment. I know of no means which aid in the advancement of our profession so much as a well-regulated hospital. In this matter we find both the surgeon and the hospital mutually benefited; one regulates the other. As a result we will now find a large number of good surgeons in our land when formerly there were but few. This is certainly a great advantage, not only to our people in general, but to corporations and individuals requiring surgical attention, who, from force of circumstances, are dependent upon a local surgeon and must be benefited or suffer in direct ratio to his knowledge and skill and the means which he can command for proper treatment and observation.

If the hospital is a good thing, and I hardly think anyone will question the fact, why not encourage its more general adoption in preference to its centralization?

If the principle will survive general criticism why not be more specific and apply it to our own system and let our local surgeons and employes share in its advantages?

In this connection, I would suggest the advisability of each division having from three to five hospitals, located at points where the co-operation of other companies could be invited. I take this stand in opposition to the proposition now so prevalent, to centralize the patients of an entire division or system at one point. I believe it would be cheaper and would yield better results. It is not necessary that a separate building should be maintained, but wards or a series of rooms in some hospital already established, or which could be established by slight encouragement of the company or companies. Not only this, but the company should see that the character of the service in these hospitals is in keeping with the latest practical developments in surgery, sanitary science and nursing. To this end, the trained nurse should be the starting point as a condition for patronage. This is essential if we desire a constant attention to the small details, which in the sum total make up the difference between success and failure. At least once a month a thorough inspection should be made of the entire medical department and hospital system by the division surgeon, or some member of the staff, who is not only competent to correct abuses, but also able to suggest means by which the service can be improved.

The expense item would be of small moment in comparison with the benefits which would accrue from better service. The avoidance of bad results in but one case, would more than pay the entire bill, with a large balance to the credit side of humanity.

Take either of the cases cited in the foregoing. Had the surgeon insisted that their well-being depended upon their careful observation until such time as the danger period had passed, is it not reasonable that both would have suffered but slight inconvenience and the courts would not have been called upon to adjust a death claim in one case and a permanent disability in the other?

In conclusion, I would re-echo the sentiment expressed at our last meeting, that no man should hold a commission on our system, who, with "malice aforethought," ignores our society. I know the time and money required by many of us to keep in touch with all our societies is no small item, but the rule is, that where a man fails to take an interest in a society with which he is directly connected, he takes an interest in none. Neglect always begets neglect. He fails to scan his journals and his textbooks become covered with dust. Trusting to luck, he moves onward, justifying conscience by ridiculing the heights which he fails to attain.

A SUGGESTION IN THE TREATMENT OF THE CENTIPEDE'S BITE.

By W. B. Outten, M. D., St. Louis, Mo.

A party of gentlemen had gone out for recreation and a hunt. They had stopped at B— S—, Tex., and the hunting in that vicinity being good, they determined to stay there for several days. As usual, they had learned, upon inquiry, that Dr. H. of that place was an in-

veterate hunter and thoroughly informed about the locations where game was most abundant. Hence they sought the doctor and begged that he accompany them, a request which was readily acceded to. The doctor soon demonstrated to his new acquaintances that he was an unusually well informed man, being highly educated and a splendid talker. Like all good talkers, he gave evidence more than once of a love for the unusual and startling, and seemingly was in love with the experimental. His talk was always full of the suggestive, his ideas filled at times with not only the quaint, but the far-off, dreamy and impractical.

It had been an unusually exciting and successful day in the way of bagging game, and after the day's hunt in the evening they were seated in their car exchanging views and rehearsing their various experiences, when one of the gentlemen present, turning to the doctor, said:

"Doctor, I am not given to flattery, but it has puzzled me as to how an intellectual and well-posted man as you plainly are, can content himself in such an out-of-the-way place as this, for here there does not exist even an ordinary future."

"Very true, sir," said the doctor, "but with me it is not a matter of preference, but a matter of necessity. Some six years ago my health became bad from a lung trouble, and consumption being in my family, I was amply warned. Upon examination evidences were found that I was consumptive, and I did not wait, but started at once in search of a climate which would benefit me. I went West into the Rocky Mountains. Here I tested various climates and altitudes and found that a high altitude rendered me excessively nervous, and it was immaterial how beneficial a high altitude might be in preventing a propagation of the bacilli in my diseased lungs, it would certainly have killed me by exhausting my nervous system. I found that an altitude of 5,000 or 6,000 feet above the sea level rendered me as nervous as an hysterical woman, causing an utter inability to sleep, and an absolute inability to remain quiet. After a good deal of experimenting I arrived at this place, which, as you see, has an equable temperature, and is only 2,300 feet above the sea level. My first advent here was anything but encouraging for I had scarcely been here 36 hours before I contracted a fever which persisted for a long period. After that I gradually improved, began to sleep and eat like a healthy man.

When I came here I weighed a little over 92 pounds; now I weight 186 pounds—over twice as much. I have been away from here several times, only to return a very sick man. Hence I believe that this is the only place on earth where I can live in health. To you gentlemen who can ceaselessly change your location and revel in the luxury of an endless variety, this may seem strange, but there are many others like me who can live in only one locality, denizens of limited space."

"But, doctor," said another gentleman, "I would think that the dull, unceasing monotony of your surroundings would wear upon and create in you a restless discontent,"

"My dear sir," said the doctor, "I for one would much prefer to face discontent than continued discomfort, pain and death; but, gentlemen, God has so made us that every man has within him the elements of contentment. Content does not abide in any locality; you may be in a desert of discontent in the heart of Paris or New York, for content only abides in the brain of man. Between my practice, study and recreation I live a contented life. I have a fine microscope and there is scarcely an animal or a plant which I have not investigated under the microscope. I have prepared many specimens and well-mounted slides. I commune with nature, and in the labor obtain my content."

At this juncture one of the party who had been outside returned with a large centipede, which had been killed, lying upon a board; it was inspected and for the time being was the object of much curiosity, speculation and disgust. The gentleman who had brought it in said:

"This is the thousand-legged monster whose bite kills, and I have heard that the tarantula's bite is even more fatal."

"I beg your pardon, sir," said the doctor, "that is an incorrect assertion, for neither the sting of the centipede nor the bit of the tarantula are fatal to the human subject. You will notice the number of legs the centipede has. Each and every leg is armed with a poisonous sting, and when it runs over a surface and you try to brush it off each leg intuitively

clutches the surface upon which it happens to be, and if it is on the skin of man, each sting attached to a leg clutches and penetrates the skin, poisoning wherever these stings penetrate, and you have mortification of the part stung, and a slowly healing sore results. Sometimes weeks and months ensue before recovery, but the centipede's poison only acts locally and never affects the blood. This is equally true as regards the tarantula and scorpion. No, gentlemen, the bite or sting of the centipede, tarantula and scorpion are never fatal; they are only locally poisonous."

"Well, that is very strange," said one gentleman. "I had always heard that the sting of the centipede was almost surely fatal."

"Yes, sir," said the doctor, "you now and then hear of death resulting from the bite of a mosquito, spider or even a fly, but such deaths are purely accidental, depending upon the lowered condition of health of the person bitten. They are incidental coincidences; these people are always sick before they are bitten."

"But, doctor," said another gentleman, "what is the best way to lessen the danger of the stings of the centipede?"

"I thank you, sir," said the doctor, "for suggesting the thought. Now then, gentlemen, to illustrate this thing better I will relate to you a story, and along with it give you some thoughts which have come to me and speak of some experiments which I am now making. I have studied the various ways in which antitoxines are prepared, for all of the advances made in the treatment and cure of the most violent forms of disease depend upon the action of a poison against a poison. Healthy animals, generally horses or asses, are taken, and a special poison is injected into the blood of the animal; gradually larger and larger doses of the poison are thus injected until this poison ceases to have effect. Then the horse or ass thus treated becomes immune to the poison and is said to be immunized. Now then, as much blood as is needed is taken from the animal and allowed to settle in properly prepared vessels; everything is removed from it but the watery part, or what is called the serum; it is then treated so as to render it free from any doubtful substance. When it is ready for use and thus made it is injected with an hypodermic syringe into the blood of the human subject for the treatment of diphtheria and other troubles. It has been shown that this immunized serum has the power to kill bacteria and other microbes. I have studied this branch of medicine as only a man can who feels the absolute necessity of keeping his mind occupied.

"About a year ago, in the latter part of April, a party of us had gone out for a plover hunt; it was a quiet day and we had some good sport. When we arrived at B— Lake one of our party determined to take a swim; he had finished his bath, and in coming out came up a bushy path, when I suddenly heard him yell and saw him frantically brushing something off the front part of his thigh. We hastened to his aid, when he said that he had been stung by a centipede and I could see a series of bright red dots in parallel lines corresponding to where the stings had gone in. I had nothing with me; not even whisky. I had often carried a little case containing a small bottle of a four per cent. solution of the permanganate of potash, a small bottle of ammonia, a small bottle of absolute alcohol and a hypodermic syringe, but when needed they were not to be had.

"You can rest assured that my mind acted rapidly as to what had best be done. We were nearly eleven miles from this point. At this juncture I happened to notice a chaparral-cock, or road runner. Knowing the habits of these birds and having studied the antitoxines, there flashed through my mind the following line of thought. Here is a bird which eats centipedes, tarantulas, etc., with impunity; why should not his blood possess more or less immunizing power. Here was a ready-made serum, and perhaps this blood might neutralize the venom of this centipede's sting. I at once shot the cock and hastily split open its breast, and tearing a piece from my shirt I saturated this piece with as much blood as I could and applied it upon the wound. The quantity was so small five or six birds were killed in order to thoroughly cover and protect the wound. The parts were then bandaged as best I could, after which we hastened home.

"Naturally I took great interest in the result of the treatment of this wound, watched the patient closely and found that he did not become feverish, and, to my surprise, no mortification occurred, and my patient was well within a week. Now then, gentlemen, I may

be mistaken, but I honestly believe that all around us are natural antidotes to the most violent poisons. I believe that while the craw of the chaparral-cock may modify the poison of the centipede, its blood is an antidote to the sting of a centipede, and perhaps of the tarantula and scorpion as well.

"I am at present experimenting with the hog, immunizing his blood with the venom of the Crotalus Confluentus or rattlesnake, and if my reasoning be correct I am convinced that the time will soon come when I can prepare an antidote to this poison. I have been at work only three months, but I have a world of hope of succeeding in what I have started out to demonstrate."

"But, doctor," said a gentleman, "I have been led to believe that the hog is a most unsanitary and infected animal."

"True, sir, but I maintain that it is the most resistant animal on the face of the earth. It can stand any and all kinds of hardships, and seemingly any and all kinds of reptilean and animal poisons. Did any of you ever hear of a hog having hydrophobia? Now, in the treatment of hog's serum it can be rendered as pure as any other form of serum, and I maintain that there will come a time when we can demonstrate that it possesses the best of all qualities for immunizing, for what will kill horses and asses and other animals will not feaze a hog. Mark my word, gentlemen, the immunized blood of a hog will one of these days come nearer curing consumption than the blood of any other known animal."

"Well," said a gentleman, "let us trust that your enforced residence in one locality will be the means of benefiting an entire world."

"I trust so," said the doctor. "Thank God, that talent and genius cannot be confined within the limits of a Chinese wall; discovery and result are made by brains, and not by regions. Good night, gentlemen."

THE WABASH RAILWAY SURGICAL ASSOCIATION.*

By E. R. Lewis, M. D., Kansas City, Mo.

The Wabash Railway Surgical Association is purely scientific and philanthropic in its organic being; is not a trade union and appeals to the highest and most unselfish part of humanity. It was organized in January, 1882, at Decatur, Ill., by Dr. Joseph T. Woods of Toledo, Ohio, then chief surgeon of that part of the Wabash system east of the Mississippi river, and at the time organized constituted the first of its kind known to the service. Some of us here to-day were regularly appointed surgeons eight years before that time upon a line west of the Mississippi river which now forms that part of the system west of St. Louis.

After a varied experience in railway surgical work extending over twenty-one years I can, and do, say it is one most largely of philanthropy; and he who views it from a purely mercenary standpoint reduces himself and tries to reduce his profession to the level of a trade. The conditions calling for the organization of a band of surgeons like this are multiple; but the most important, as I view it, is for the purpose of personal improvement in our common work, that we may the better be enabled to compete with the complications of emergencies by instructing the whole from the experience of the individuals, thus bringing to bear the consensus of opinion to in turn enlighten the individual; and in this special line of work we must all realize how very important this has been.

We are not like the legal profession, with a supreme court decision upon which to rely, but must accept the conditions as we find them, and with the enlightenment of personal experience, based upon a fundamental scientific education and the experience of our fellows, we start for the shore in as seaworthy a craft as can ride a wave, thus giving to all who fall into our hands the benefits of the most modern treatment, be they the tramps upon the right-of-way, the employes at their posts, or the passengers, all alike receiving the attention of the skilled laborer, who deals not alone with the mechanical part of man, but is in active sympathy with the psychical as well. We congratulate ourselves that the chief surgeons of the Wabash have all been men in the regular line of professional work, showing the care and judgment exercised by the company in trying to give, not alone to the employes, but all who are so unfortunate as to come within the province of the department, the highest order of medical and surgical service. In making this statement I wish to assure all

* The president's address at the annual meeting of the Wabash Railway Surgical Association, held in St. Louis, November 1896.

that this fact, to me, redounds to the lasting credit of this association, whose continued organization has been made possible by the good judgment and aid of the chief medical and surgical officers since its beginning; and I challenge anyone to point to a like number of men banded together who can, and do, better work for all concerned.

The veteran president of the Wabash railroad, Mr. O. D. Ashley, has from the beginning greatly aided in the effective work of this association by giving encouragement and good cheer, ever ready to adopt that which is clearly an advantage in any and every department of the service, keeping fully abreast with the age, and far in advance of other more pretentious lines in this country, and the general managers, without exception, have sustained its benign workings.

There is certainly no state in the union that can truly boast of a more equitable, just and philanthropic set of railway management toward the injured than the lines operated from, or passing through, Missouri, and I believe the surgeons and physicians engaged in this work have devoted that time and attention necessary to the work to justly entitle them to the first rank in this special line; and certainly none have thus far excelled the Wabash Surgical Association, and our effort has been to let him who best can, and will, instruct the whole, and at the same time realizing that the greatest advances in our profession have sprung from little things and individual effort; thus admonishing us that in this line of work there are no successful back numbers to-day, and if we are not abreast with the wonderful progress of our profession, we, too, must be side-tracked and give place to more modern equipment, that the engine of the times may not be impeded.

OBITUARY.

Henry H. Middelkamp.

Dr. Henry H. Middelkamp of Warrenton, Mo., was born January 27, 1839, in Warren County, Mo. He was the eldest child of John H. and Margaretta M. Middelkamp, natives of Germany.

He was educated in the common schools of Missouri, with private instructors in mathematics and the languages, and received the honorary degree of A. M. from the Central Wesleyan College, Warrenton, Mo., June 16, 1891. He began to read medicine at Warrenton in 1862, under Dr. John E. Hutton, then of Warrenton, a member of Congress in 1884-88. Dr. Middelkamp attended two courses of lectures at the St. Louis Medical College and graduated March 4, 1864; he also took short post-graduate courses at the same institute.

He practiced medicine at Warrenton from March 12, 1864, until his death. He was the founder of the Linton District Medical Society, November 19, 1872, and was its president until 1874. He was a member of the Missouri State Medical Association, and its president in 1884-85; also a member of the American Medical Association; of the Ninth International Medical Congress; of the Mississippi Valley Association; of the St. Louis Medical Society; of the Wabash Surgical Association; of the National Association of Railway Surgeons; an honorary member of the St. Charles County Medical Society, and a member of the Masonic Fraternity.

Dr. Middelkamp was lecturer on surgery in the medical department of the State University at Columbia, 1876-79, medical examiner for the department, 1876-80, and curator of the university, 1877-79. He was a member of the board of health of Warrenton, 1892-97; physciian to the county, 1879-80; county superintendent of public schools, 1870-72, and surgeon to the Wabash Railroad since 1884. He performed all the capital operations common to railway surgery and devised special apparatus for the treatment of wounds and fractures. He published the following: "Presidential Address," State Medical Association (Medical Education); "Personal Qualifications of the Surgeon;" "Immediate Amputations," and other papers. He was married September 11, 1864, to Miss Ellen Smith of St. Louis, Mo. Their children are W. A. and E. G., Marion Sins and Katherine E., Geo. H., Harry and Herbert H., the three last deceased.

Dr. Middelkamp died April 19, 1897, after being ill since September 25 last. Seven months of that time he was confined to his bed. Up to the last week of his life his patients came to his bedside for advice and help; this seemed to give him great pleasure to be able to alleviate the sufferings of others if he could not get relief himself.

A New Osteoplastic Amputation of the Foot.

The following is from the editorial columns of the New York Medical Journal:

Professor Z. Samfirescu, director of the laboratory of operative surgery and topographical anatomy of the Jassy faculty of medicine, and his assistant, Dr. H. Solomovici, have devised a new osteoplastic amputation of the foot which they describe in the February number of the Revue de chirurgie. It does not seem to have been performed on the living subject yet. The authors remark that it is a modification of Quimby's operation analogous to Pasquier and Le Fort's modification of Pirogoff's. Quimby, they say, in order not to deprive children of the epiphyseal cartilage of the tibia, divided the calcaneum vertically and interposed the posterior portion, retained in the flap, between the malleoli, without removing anything from the tibio-fibular mortise.

The authors describe their operation as follows: As guiding points for the flap incisions they take the tubercle of the scaphoid bone internally, a corresponding point above the fifth metatarsal bone externally, and the outer border of the insertion of the tendo Achillis. The thumb and forefinger of the left hand, spanning the sole of the foot, with the hand supine, are placed one on each of the two corresponding guiding points. The distal part of the foot is bent downward and inward, and the point of the knife is inserted near the third guiding point, the outer border of the insertion of the tendo Achillis, whence a horizontal incision is carried forward to the immediate vicinity of the end of the external malleolus, and then still farther forward to the other external guiding point, just above the tubercle of the fifth metatarsal bone. Then the incision is carried over the instep toward the scaphoido-cuneiform articulation, the foot being held outward, until it reaches to the tubercle of the scaphoid bone.

Then, with the left hand pronated and embracing the dorsum of the foot, the foot is held up toward the leg, and the plantar incision is made. It is deep, and, beginning at one of the two corresponding guiding points—the tubercle of the scaphoid bone in the case of the right foot—it forms a loop in front of the calcaneocuboid articulation and extends to the other corresponding guiding point over the fifth metatarsal bone. All the muscles and tendons are then cut to the bones. The dorsal flap is dissected up to the tibio-tarsal articulation, and the plantar flap to the calcaneocuboid articulation.

The next steps are the tibio-tarsal disarticulation and a horizontal section of the calcaneum. The joint is attacked from the outer side, as advised by Farabeuf. An assistant holds the leg flexed at a right angle with the thigh, with the knee turned inward and the lower part of the leg resting on the edge of the table. With the dorsal flap raised, the external ligament is divided beneath the end of the malleolus, opening that portion of the joint which is found between the malleolus and the outer articular surface of the astragalus. By this incision the three external ligaments are divided, the anterior and posterior astragalo-peroneal and the calcaneo-peroneal. The foot is now turned inward, and the slender anterior and posterior ligaments are divided. The fat lying upon the calcaneum is removed, exposing the insertion of the tendo Achillis, and in front of that tendon is placed the saw for making the section of the calcaneum. Almost a finger's breadth of the bone is removed posteriorly, but, anteriorly, the section stops beneath the lesser apophysis of the calcaneum. The section is made from behind forward and from within outward until the saw reaches the calcaneo-cuboid joint, at which disarticulation is then performed. In this procedure it may be well to remove the anterior cartilaginous portion of the calcaneum for a distance of from a third of an inch to an inch, especially when the operation is one of necessity and there is not enough left of the soft parts to admit of fashioning the flaps according to rule.

The malleoli and the tibio-fibular mortise are prepared to receive the lower segment of the calcaneum in the following manner: The skin over the malleoli is dissected up to the base, but the periosteum is left in place. The articular cartilage of the malleoli and of the mortise is scraped, preferably with a raspatory. As the mortise presents an antero-posterior concavity, the anterior and posterior lips of the hollow are cut away with scissors, in order that the surface may be plane for the coaptation of the cut surface of the calcaneum. Then, still with the raspatory, the periosteum is separated from the calcaneum on each side for a sufficient space to make the bare bone come in contact with the inner surfaces of the malleoli. The segment of calcaneum, still attached to the plantar flap, is then gently forced in between the malleoli, which hold it fast so that no bone sutures are needed. It is well to shorten the outer malleolus a little, but this is hardly necessary with the inner one.

Fresh Air.

Be a friend of fresh air,
Get out in the breeze;
Fresh air is a doctor
Who charges no fees.

—Kramer.

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As this issue of The Railway Surgeon leaves the press the Tenth Annual Convention of the National Association of Railway Surgeons is coming to order in Chicago, and there is sent with this, in the form of a supplement, a copy of the first issue of the daily edition of this paper, which is to be published each morning during the convention. All indications point to a successful and profitable meeting. The attendance will probably not be as large as at some former conventions, for the long-continued hard times have made themselves felt in a diminution of the membership of the association. It is likely, however, that, while absolutely smaller, the attendance will relatively represent a larger percentage of the total membership of the association than has the convention of any former year. The decrease in membership has not been among the active workers of the association. On the contrary, never before has there been shown so much earnestness and interest in the affairs of the association by the membership at large, and never before has the association been such a compact and workmanlike body as it is to-day.

THE MONTREAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

The Canadian committee of arrangements for the coming meeting of the British Medical Association at Montreal is giving itself much needless anxiety in regard to the fancied danger that the meeting will be invaded by physicians from the United States who are not members of the association. The New York Medical Record, it would seem, has been engaged to sound a note of warning urging all persons not honored by special invitations to stay away from the meeting. A circular letter has also been sent to other journals explaining that a few noted persons are to be invited and that the committee is quite unable to accommodate others. This is all very amusing, and to say nothing of the narrowness and selfishness of the thing, it strikes us as very impolitic and from a business standpoint a blunder. From our experience in preparing for the entertainment of the members and guests of our National associations it seems ridiculous to suppose that so large a number of physicians from the United States would care to attend the meeting of the British Medical Association as to become a real source of embarrassment in a city the size of Montreal. As is well said by the editor of the Journal of the American Medical Association: "The British Medical Association, like our association, should be free and independent, and its management should be capable of controlling any crowd of members and visitors who may come. Every section should be independent to adapt itself to the conditions of the meeting. The Montreal committee are not making their duties less nor winning respect from the profession by sending out vaguely worded circulars to keep people away, even from the States. While the profession at large have only a general interest in this association meeting, it seems lamentable that any journal in the States should notice, or even publish any letter conveying the morbid fears of the committee, which to say the least are implied insults to the honor of the profession. The

Montreal meeting should be a most notable event in the medical history of the year, but it should be managed as all other meetings of physicians are, and as it is always managed when it meets in England, that is, on broad scientific and business principles. It should be for the members alone and invited guests and the presence of a crowd of visitors and listeners should never create the slightest apprehension, but rather be considered as a compliment. A wise committee would seek to enlarge the membership from this crowd and not repel them, but impress upon them the value and need of belonging to such an association."

THE PHILADELPHIA MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

The coming meeting of the American Medical Association at Phildelphia during the early days of June promises to be the most largely attended and the most interesting from both a social and scientific point of view of all the meetings of this great association. The committee of arrangements has arranged for the accommodation of at least 5,000 persons and every effort has been made to induce the members and their families from all parts of the country to attend and celebrate the semi-centennial of the association. It is to be hoped that every physician in the land who can will attend the meeting, and if he is not a member that he will join the association and help to carry on the good work which it is doing in uniting the profession of our country; for surely, never in history has there been a greater need of a united professional brotherhood and never was there greater necessity for harmonizing our ideas, scientific, ethical and legislative.

All who must pass through Chicago in order to attend the meeting are invited to go by the Journal's special over the Pennsylvania lines, which leaves Chicago at 11 a. m., Sunday, May 30. For circular giving full information in regard to this train, write to H. R. Deering, assistant general passenger agent of the Pennsylvania lines, 248 Clark street, Chicago.

Now is the time to join the National Association of Railway Surgeons. Volume IV of The Railway Surgeon begins June 1.

Extracts and Abstracts.

Traumatisms of the Liver.[1]

The following review of an exhaustive paper by Dr. Schlatter on the "Treatment of Injuries of the Liver," originally published in the Beitrage zur Klinischen Chirurgie,[2] is contributed to the editorial columns of the Annals of Surgery by Dr. H. P. de Forest:

In most modern text-books of surgery but little space is devoted to injuries of the liver, and even in cases where the injury to the parenchyma of the organ is comparatively slight the prognosis is regarded as very grave. Thus is perpetuated the old idea that injuries involving the liver are necessarily fatal. Fortunately, a review of recent literature reveals the fact that here as elsewhere, modern surgery has done much to lessen the gravity of the prognosis.

As has been shown by Mayer,[3] all surgeons up to the beginning of the present century united in regarding injuries of the liver as practically hopeless. The famous surgeon of the Napoleonic wars, Larrey,[4] writing in 1812, says:. "Laceration of the liver will always prove fatal if the wound communicates with the abdominal cavity;" in another place he states, "The escape of bile into the abdominal cavity is fatal." As late as 1864, Pirogoff[4] asserted that wounds of the liver were more frequent than of the stomach or spleen, and, in his experience, were always complicated and fatal. At the present time, however, it is a satisfaction to know that this region no longer is characterized by the phrase noli me tangere, and that the surgeon familiar with modern technique may act energetically in the face of apparently fatal injuries.

Few cases are recorded in comparison with the injuries which actually occur. The most complete statistics are those of Edler, in 1887, of 543 cases, including those of Mayer (267) and of Nussbaum, 1880 (251). This is easily accounted for, since many persons so injured die before medical assistance is ever obtained, and in other cases the prognosis is so hopeless from the time of injury that there is little inducement for publication.

The prognosis has materially changed within the past decade. Formerly, physicians based their views almost entirely upon their personal experience. Nowadays medical literature is so extensive that a much wider field can be covered in the formation of an opinion. The mortality shown by the statistics of Edler is 66.8 per cent; in ruptures 85.7 per cent; in

1 Beiträge zur klinischen Chirurgie, Bd. xv, Heft II, Tübingen, 1892.
2 Die Wunden der Leber und Gallenblase, Munich, 1872.
3 Memoiren der Militärchirurgie, 1812.
4 Kriegschirurgie, 1864, p. 576.

gunshot wounds, 55 per cent; in incised wounds, 64.6 per cent. Since these reported cases are only those of more than ordinary interest, or those in which the prognosis was especially favorable, these figures show a better condition of things than really exists.

A small minority of patients recover, and sometimes do so without external interference, for it occasionally happens that, at an autopsy there is found an old and healed scar in the parenchyma of the liver. This fact is alluded to by Nussbaum, who adds that "it should strengthen our hope that in a few cases something can really be done."

As early as 1795 Theden[1] states that "the primary danger in wounds of the liver lies in the hemorrhage that occurs, and this danger is increased if any large bile-ducts are opened. As both blood vessels and bile-ducts are larger on the under surface of the organ than elsewhere, wounds in this region are more dangerous than those of the convexity." These views correspond practically with those of the present day. Were it not for the complications of loss of blood primarily, and secondarily cholæmia, wounds of the liver would not be dangerous in themselves. It is now known that the escape of bile into the peritoneal cavity is not of necessity a source of danger. The mechanical irritation caused by its presence may give rise to a serous exudate, but bile is markedly antiseptic in its nature, and many cases have been reported in which bile remained free in the abdominal cavity for days or even weeks without giving rise to peritonitis.

The task, then, which the surgeon is called upon to perform in cases of traumatic injuries of the liver is to check the hemorrhage as soon as possible, and to prevent the retention of bile in the peritoneal cavity on account of its liability to cause cholæmia. Various methods have been used to produce this desired result. Rest was, of course, the method earliest employed. Later came the era of antiphlogistic treatment with the accompanying vesication and venesection, and to-day one wonders at logic which could support such remedies. Of direct applications compression by means of tamponnade was the simplest, most primitive and quickest method used. Then came the thermo-cautery, and, within recent times, direct suture of the wound as in other parts of the body.

It is to this latter method that Dr. Schlatter especially directs his attention.

The literature on the subject is not very extensive. Postempski, in 1892, reported five cases in which recovery occurred after the wound in the liver had been sutured. Operations by Adler,[2] Smits,[3] and von Eiselberg[4] gave good results with this method. Burkhardt,[1] however, regarded the method of suture as available only in those cases where the wound is a superficial one; if too deep to be included in the track of the needle he advocates the use of iodoform-gauze tampons, so arranged that fibrinous exudate after a few days would form a canal leading to the surface of the abdomen for the escape of bile and wound discharge. Langenbuch[2] performed the operation of fixation of a "wandering liver" by passing a row of sutures through the entire thickness of the right lobe and then fastening them to the costal cartilages. Adler[3] reported a case of stab-wound of the liver where, in spite of the use of sutures, hemorrhage still continued, and tamponnade was finally necessary. Hochenegg, after the removal of a tumor from the liver, perferred to treat the wound extraperitoneally, and supported the upper and lower edges of the wound by sausage-shaped rolls of iodoform gauze, held in place by deep mattress sutures. Von Bergmann[4] removed the adenoma of the liver and checked the bleeding by drawing the wound together with silk sutures and tying them over strips of iodoform gauze placed along the wound. The sutures were left in place some days, and finally carefully removed. Korte[5] had a case in which a gunshot wound of the liver was cured by iodoform-gauze tamponnade of the wound. Other writers cited are divided in their preference between the thermo-cautery and the tamponnade with iodoform gauze.

Dr. Schlatter adds to these cases five more of his own. A summary of these is as follows:

(1) Stab-wound of the liver; prolapse of the colon and omentum; profuse hemorrhage from the liver; wound about one inch wide and so deep that the finger-tip failed to reach the bottom; two deep sutures of heavy catgut and two capsular sutures of fine silk; recovery.

(2) Gunshot (revolver) wound of the liver; severe hemorrhage; three deep sutures of heavy catgut checked the bleeding and a good recovery was made.

(3) Gunshot wound of the liver by Flobert projectile. The track of the bullet involved the stomach, the jejunum, the pancreas, and the left kidney. Patient seventeen years old and liver tissue was friable. Six deep silk sutures stopped hemorrhage; death after eight hours.

(4) Rupture of the liver and right kidney two days before operation; extreme anæmia; laparotomy; suture of liver; hemorrhage stopped; saline infusion; death.

(5) Almost complete sagittal rupture of the left lobe of liver. Profuse exudate of bile into

1 Mayer, p. 114.
2 Deutsche medicinische Wochenschrift, 1892, No. 2.
3 Centralblatt für Chirurgie, 1893, p. 622.
4 Wiener klinische Wochenschrift, 1893. No. 1.

1 Centralblatt für Chirurgie, 1887, p. 88.
2 Centralblatt für Chirurgie, 1891, p. 82.
3 Deutsche medicinische Wochenschrift, 1892, No. 2.
4 Centralblatt für Chirurgie, 1893, No. 30.
5 Sammlung klinische Vorträge, No. 40.

peritoneal cavity; laparotomy and suture of the liver fourteen days after the injury; death.

In only one of these cases (3) was there a tendency for the sutures to cut through the tissues. In this case silk instead of catgut was used, and the tissues were more friable than in the other patients, who were all adults. The results, so far as the checking of the hemorrhage from the wounded liver was concerned, must be regarded as satisfactory. The combination of deep catgut sutures of large size with fine silk superficial sutures of the capsule is recommended, and will be used by the writer in the future. In view of the success attending the first of these cases the objection of Burkhardt to the use of sutures in any other than superficial wounds does not appear to be valid.

The fact that it is possible to completely close the abdonimal cavity after the use of sutures in wounds of the liver adds materially to the clinical value of the procedure.

That large bleeding vessels in the parenchyma of the liver may be ligated directly has been shown by Clementi's[1] experiments upon animals, and by Smits' and Von Bergmann's operations.[2]

Where the wound is a large one, as after the removal of a tumor, the combination of sutures, mattress sutures, and tamponnade may be necessary; but as a rule the tampon should be used only in cases where sutures have failed to check the hemorrhage. Of the three methods the thermo-cautery is of least value. It will check only moderate parenchymatous hemorrhage, is of no value in extensive wounds, and is apt to be followed by secondary hemorrhage.

Another important question remains to be considered in this connection. However summarily the surgeon may act in gunshot or stab-wounds of the liver, there remains a class of cases in which the diagnosis is often very difficult, and the proper course to pursue is uncertain. These are the cases of subcutaneous rupture. Of course, if, after a severe injury to the abdomen, in the region of the liver, there gradually develop the symptoms of internal hemorrhage, if the pulse becomes more rapid and small, if the patient grows more and more anæmic, if the area of liver dullness on percussion is increased, if pain, referred to the scapular region, develops, or icterus begins to appear, the diagnosis is easy. Unfortunately for physicians, cases where the symptoms are so well marked are very rare. Such violence as is caused by the kick of a horse does not by any means always result in an internal lesion. Fatal cases have been reported of this character where the autopsy revealed an acute peritonitis and no other internal injury. On the other hand, slight accidents may give severe results; for example, the mere fall upon the ice.[1] The cause of rupture of the liver may be an indirect one, as is shown strikingly in a case reported by Rezek,[2] where the victim fell a short distance, striking upon the feet; death was shown to have been caused by a rupture of the liver and of the great vessels at its base. Aside from the size of the organ, the slight elasticity of its tissue, its method of attachment, and its weight are important factors in the occurrence of rupture.

The symptoms of internal hemorrhage may also easily be confounded with those of shock arising from slight contusions of the abdomen. Changes in the heart or in the brain will give a similar clinical picture to the one produced by bleeding; thready or absent pulse, deathly pallor, superficial and irregular breathing, and marked mental depression with restlessness. A differential diagnosis in such cases may be impossible, and time only will show the actual condition.

To diagnostic uncertainty must be added the other considerations, which add to the surgeon's perplexity. Certain cases of ruptured liver have gone on to a spontaneous recovery, without surgical intervention. Even if an operation be performed, the occurrence of liver-cell emboli may set at naught the best efforts, and the more severe and extensive the laceration the more apt is such a misfortune to occur. In view of these facts would it not be better for the surgeon to sit idly by and allow the patient to await his fate?

To this important question most operators will answer, "No," and maintain that it is the duty of the surgeon in such cases to adopt the course that offers the greatest number of chances of success to the patient. If an operation be performed and a slight injury found, there is, of course, a very slight possibility that spontaneous recovery could have taken place. On the other hand, if the liver is found almost pulpefied by the severity of the trauma the patient would die in any case. Between these two extremes lie a great number of cases of varying severity. The decision must be given in favor of an exploratory laparotomy. If occasionally such an operation is performed with no discoverable necessity, the surgeon can, at the present time, easily justify the procedure as being on the side of safety; how much more severe will be the censure if he has failed to realize the gravity of the case, and has either operated too late or not at all.

The time of operation is to be determined by the fact that the sooner it is performed the more apt it is to be successful. For the surgeon the only question of doubt is regarding a possible unnecessary operation. With the practising physician the decision is much easier. If there is the slightest indication that

1 Centralblatt für Chirurgie, 1892, p. 84.
2 Op. cit.

1 Meyer, p. 165, Case 86.
2 Bdler, p. 346.

there may be a rupture of the liver, the decision of a surgeon should be at once obtained in order that no valuable time may be lost. The diagnosis will often be cleared up in the meantime, and an operation may be performed with the least possible delay.

The only remaining question to be considered is the one, What portion of the abdominal wall offers the best site for the operative incision? The upper portion of the liver, hemmed in as it is by the costal framework and by the diaphragm, is in a bad position for surgical access. The left lobe and the irregular and concave under surface is, on the contrary, most accessible. By moderate traction the anterior portion of the convexity can usually be brought within reach, and in a similar manner even the almost inaccessible posterior parts can occasionally be operated upon. In one case reported above (Case 4), Schlatter was thus able to suture the lobus spigelii. Division of any of the ligaments of the liver, with the possible exception of the suspensory ligament, which is of little or no hinderance to an operation, is scarcely to be contemplated. The use of tension will therefore be of but little assistance in moving the organ to any given site of operation.

In penetrating wounds the existing wound can be enlarged and converted as far as possible into the incisions about to be described. If site of injury is in the left lobe, or is undetermined, a median incision should be made; in wounds of the right lobe a curved incision along the lower border of the costal cartilages and to the right of the rectus muscle is to be preferred. In some cases these may be combined, thus forming an angular incision. Since by far the greater number of wounds of the liver are located on the ventral or lateral aspects of the vicus, these two plans of attack will nearly always suffice. Wounds situated posteriorly, the lumbar incision is hardly to be recommended on account of the thickness of the muscular walls, and the fact should be borne in mind that, as reported by Lannelongue, the thoracic wall can be resected along the anterior portions of the eighth, ninth, tenth and eleventh costal cartilages, for the pleura does not extend down to this part of the chest wall. The method of Lannelongue consists in an incision parallel with the thoracic border, and two centimeters above the same, beginning three centimeters from the border of the sternum, and ending at the junction of the tenth rib with costal cartilage. The retraction of the divided muscles exposes the costal cartilages to be resected, they are carefully freed from their attachments and cut through with cartilage scissors. Then, if the ends of the ribs are retracted and pressed apart, nearly the entire extent of the convexity of the liver can be made accessible.

It seems probable that if these practical suggestions of Dr. Schlatter are adopted as a basis of treatment, not merely by surgeons, but by the practising physician as well, the prognosis in injuries of the liver will in the future be much more favorable.—H. P. de Forest.

The Replacement of a Depressed Fracture of the Malar Bone.

At a recent meeting of the Practitioners' Society of New York Dr. R. F. Weir made the following report:

Fracture of the malar bone is not a common injury, and the depression of the broken bone into the antrum is yet more infrequent. From this complication marked deformity ensues from the flattening of the cheek and from the bony irregularity along the outer part of the inferior margin of the orbit. Disturbance is likewise produced in mastication and other movements of the lower jaw from the compression of the temporal muscle by the zygomal end of the fracture. Its recognition is easy, but the reposition of the displaced bone is usually difficult. The following cases illustrate a method that satisfactorily overcame the deformity, replaced the bone in its normal position, and restored the function of the temporal muscle. The measure adopted in the two instances to be presently detailed consisted in making a small opening with a gouge into the antrum within the mouth, just above the canine teeth, so that through this a No. 12 or 14 (English) sound could be introduced and by this means the depressed fragment forced upward and outward into its proper position. This procedure sufficed in each instance to a very satisfactory degree. The cases in detail are as follows:

Case I: Patrick McC——, aged 21 years, entered the New York Hospital, October 22, 1890, having been struck six days previously in the face with a heavy mallet, which felled him to the ground and left him for a time unconscious. When admitted to the hospital he was in good general condition, with his right eye nearly closed by an ecchymotic swelling, which invaded also the cheek. A depression existed not only in the region of the malar eminence, but also along the outer part of the inferior margin of the orbit and at the anterior extremity of zygoma. A sharp projection of bone could be felt just beneath the skin where the fracture terminated in the orbit. He was treated by local applications but suffered from the pain in the upper jaw, with, however, but little in mastication. He came under my observation about three weeks after the injury. The deformity from the difference in the two sides of the face was very pronounced and disagreeable.

Under ether, November 16, an incision was made through the mucous membrane, just above and to the outside of the right upper canine tooth and the antrum opened by a small

gouge. Through this opening a steel sound was passed and with but moderate force the depressed bone was loosened and raised into its proper place. Though it seemed firmly held in its normal situation, it was thought best to retain it by packing the antrum with a long strip of iodoform gauze. This was withdrawn on the fourth day after the operation and replaced, and finally withdrawn on the tenth day. One week later he was discharged, the little wound in the mouth healed, contour of face natural, function of mastication perfect, and only a slight irregularity along the orbit, to be felt but not seen. When inspected several months later the restoration remained equally satisfactory.

Case II: Charles K——, aged 31 years, was struck by a flying hammer June 1, 1896, receiving a simple fracture of the left malar bone. Two weeks later he entered the New York Hospital. Besides the sunken appearance presented by the left side of his face, there was inability to open the mouth more than three-eighths of an inch. Above the left alveolar margin of the upper jaw, a piece of broken bone or tooth protruded, covered by mucous membrane. Under ether the attachment of the upper lip and cheek to the left superior maxilla was divided and the soft parts were reflected upward until the line of fracture appeared. The malar bone had been crushed down into the antrum of Highmore. No marked irregularity existed along the orbital margin. A urethral sound was passed through the incision under the lower edge of the fractured bone, and the displaced fragment was pried up into position. The antrum was tightly packed with iodoform gauze, which served to hold the malar bone in its correct position and acted as a drain. There was no reaction and four days later the patient was discharged, but the gauze was not finally withdrawn until ten days later. He was seen several months later and the shape of his face was fully restored. In this case, after the malar bone had been replaced, it was found to be so mobile, and to have carried with it a large flake of the anterior wall of the antrum, that difficulty was anticipated in being able to maintain the replaced fragment in good position, but a firm packing of gauze accomplished the purpose.

Discussing the case, Dr. Abbe said he had had his first experience with depressed fracture of the malar bone two months ago, and was not aware that Dr. Weir had had similar experience. His case was that of a young man whose head had come in collision with that of another man while they were playing football. Dr. Abbe saw him on the third day. His face was greatly disfigured. The malar bone was broken in, and when raised with a probe introduced under the lip it would not remain in place, but would dance back and forth in the antrum. He then supported it with a drill passed through the solid part of the zygoma, and after ten days or two weeks it had healed solidly in place and the drill was removed. There was not a scar except a dent in the skin. The mouth wound was closed at once. He thought the advantage of this method over that of packing the antrum might in some cases be great. The procedure was very simple and preserved the antrum from possible infection. The only disadvantage was the small puncture scar made by the drill. Mastication was not interfered with. Dr. Abbe added that the lower wall of the orbit was also depressed by the injury and the appearance was very uncanny.

The president had once seen a case of depression of the malar bone and lower orbit caused by a railroad accident. Dr. Sands also saw the patient. Nothing was done, and there was horrible deformity the rest of life. Such an operation as had been described to-night would have been of inestimable value to that woman.—Medical Record.

Concussion of the Spinal Cord.

At the October meeting of the Philadelphia Neurological Society Drs. De Forest Willard and William G. Speller made the following valuable communication:

The following case of fracture is intersting from a pathological standpoint rather than from a clinical. The accident occurred during the service of Dr. De Forest Willard at the Presbyterian Hospital. We are indebted to Dr. W. E. Hughes, pathologist to the hospital, for the material.

In consequence of a severe blow from a trolley car the spinal column was fractured at the eleventh thoracic vertebra. The lower limbs were completely paralyzed, and no involuntary movements were noticed. Sensation was entirely lost below Poupart's ligament, except on the front and outer part of the thighs, in the distribution of the external cutaneous nerves. These nerves arise from the second and third lumbar roots (Gray), though in some cases they receive fibers from the first lumbar (Quain). The lesion in the spinal cord was located chiefly at the first, second and third lumbar segments. It has been shown that it is necessary to cut at least three spinal roots in order to destroy the sensation in an area of the body. This fact may explain the preservation of sensation in the distribution of the external cutaneous nerves notwithstanding the location of the spinal lesion.

Inability to urinate and defecate was observed. On examination the eleventh thoracic vertebra was found elevated and the twelfth depressed. By manipulation the prominence was reduced, but the depression remained. Death was chiefly due to exhaustion. At the

autopsy a large amount of blood was found in the muscular and connective tissues at the seat of injury, the laminæ of the eleventh thoracic vertebra presented an irregular line of fracture, and hemorrhage as noticed within the vertebral canal, but external to the dura. It is probable that most of this blood flowed into the canal in removing the posterior part of the vertebræ. There was no evidence of displacement of the vertebral bodies. The dura was intact, and after it had been opened no hemorrhage as observed within. The cord, even at the seat of fracture, was quite firm and of normal shape, and presented exteriorly no distinct signs of softening. It was placed at once in Müller's fluid and transverse cuts were not made at this time, as the material was desired for microscopic study. There were no indications of injury from pressure upon the spinal cord exteriorly.

As the vertebral bodies were not removed it could not be determined whether they were fractured or not; no evidences of this were noticed from examination in situ.

The accident occurred on a Monday, and the patient lived until the following Saturday.

From the picture given by Gowers[1] of the relations of the vetebral column to the cord, we would expect to find the lesion caused by dislocation of the eleventh upon the twelfth thoracic vertebra greatest in the first, second and third lumbar segments. This was exactly the area injured.

The microscopic findings consist of displaced fibers in one portion of the cord, numerous hemorrhages, altered blood pigment, masses of granular corpuscles, necrosed tissue, swollen axis cylinders, tumefied ganglion cells, and round-cell infiltration. The spinal roots contain a few swollen axis cylinders, and the medullary sheaths do not stain quite as deeply with hæmatoxylin as do those of normal fibers. The blood vessels everywhere are much dilated.

The case reported recently by A. Westphal[2] has many features in common with the case which forms the subject of this paper. His patient fell from the second story to the pavement in a delirium of fever. After the accident the movements of the upper extremities were free and the lumbar portion of the spine was very sensitive to pressure, although no deformity was present. Complete flaccid paraplegia of the lower limbs, with absence of the knee-jerks, was observed.

At the autopsy the bodies of the first and second lumbar vertebræ were found broken, and the vertebræ were dislocated, but nowhere, as in our case, was there pressure on the cord and its membranes. The muscular tissue at the seat of fracture was infiltrated with blood. The dura was intact, and there was no hemorrhage within it. The form of the cord was well preserved. The greatest alteration was observed in the sacral region. When microscopical examination was made the ganglion cells were found alterd, swollen and rounded off; in some the nucleus was displaced, in others there was no nucleus or nucleolus. There was rarefaction of the gray and white matter, and small hemorrhages were found in the gray substance, especially about the central canal and in the white matter. In the sacral cord the normal outlines of gray and white matter were altered and could not be fully defined. In this case, as in our own, dislocation of the vertebræ occurred. This explains the displacement of fibers, but many of the other changes must be considered as the direct result of the concussion to the spinal cord, as Westphal himself says, in regard to his case. His patient lived seven days after the accident, ours survived the trauma five days.

Westphal states that most of the cases of traumatic myelitis known to him in the literature concern persons in whom death occurred immediately or else a long time after the accident, and are unfitted for the study of the early morbid changes. His case, therefore, and ours present such alterations as occur within a week. In a paper published by one of us[3] the changes which occur after thirty-six hours were mentioned. These consist mainly of swelling of the axis cylinders.

The two regions of the spinal column which seem to be especially liable to fracture are the lower cervical and the lumbar. In the paper already referred to (Spiller, loc. cit.) a case of fracture in the former of these two regions was reported, and the hemorrhage within the gray matter was described. In that case the anterior horns were most involved, in this one the left posterior horn in the eleventh and twelfth thoracic segments was destroyed.

Goldscheider and Flatau[4] have shown by injecting staining solutions into the thoracic region of the spinal cord of the living and dead animal that the fluid, if injected into the anterior horn, has a tendency to pass to the posterior horn and to ascend in this; if injected into the posterior horn it is not apt to enter the anterior. This may be explained by the difference in the formation of the two parts. From these experiments we must expect to find extensive hemorrhage in the posterior horns more frequent than in the anterior. Lamy[5] has noticed after the injection of inert powder into the vascular system of the spinal

1 Gowers. Disease of the Nervous System (English edition), Vol. I, p. 163.
2 Westphal, Archiv für Psychiatrie, xxviii, Heft 2, p. 554.
3 Spiller. International Medical Magazine. April, 1896.
4 Goldscheider and Flatau. Abstract in the Semaine médicale, 1896 Nos. 23 and 25.
5 Lamy. Comptes rendus des séances de la Société de biologie. July 25, 1896.

cord that the emboli are more apt to obstruct the branches of the anterior spinal system which nourishes the gray matter, and even when they invade the entire vascular system, the lesions are greater in the gray matter. After the vessels have been obstructed red softening of the gray matter almost invariably occurs. A central cavity may result from the softening, and in a dog he actually found such a cavity after the expiration of three weeks, which "resembled greatly syringomelia." Cicatricial tissue may replace the necrotic tissue and present the appearance of an old hemorrhagic focus.

It is not our purpose to discuss the possibility of a traumatic origin of syringomyelia; that has already been done (loc. cit.).

Emboli always follow the most direct current of blood, and these experiments of Lamy would strengthen the view already held, that in the vascular system of the cord the flow of blood is greater and more direct in the distribution to the gray matter.

Pfeiffer[6] has published recently an interesting resume of the views held in regard to spinal hemorrhage.

Every neurologist has seen the cases of "railway spine" in which paraplegia or paraparesis, with increased reflexes, plays an important role, and usually such conditions are considered as functional. Frequently, however, the suspicion arises that after all we may be too quick in forming our diagnosis, and that possibly there is in some of these cases an organic change. The signs presented are often those which a lesion of the thoracic or cervical cord would give. Such a case is reported by Dercum.[7] The patient fell some thirty feet, and the resulting sensory and motor disturbances Dercum ascribes partly to actual physical injury, partly to traumatic neurasthenia. He speaks especially of the violence done to the muscles and the vertebræ after such serious accidents. Certainly the probability of the existence of these organic changes must be apparent to everyone. But have we not reason to think that the cord also suffers from such serious traumata? When the damage is so great that the vertebræ are fractured death frequently occurs, and we have an opportunity to study the spinal lesions. There are likewise cases of spinal hemorrhage from trauma in which the vertebral column is not fractured, but these are rare. Usually in the milder forms of traumatism the patient lives on, more or less of a cripple, and the opportunity for microscopic study is not given. Such a case as the one published by Westphal, or as the one by Higier,[8] in which the symptoms indicated a lesion of the conus, while injury of the eleventh and twelfth thoracic vertebræ was observed, therefore, above the portion of the cord affected; or, as the case we report, in which a large portion of the changes of the spinal marrow were probably not the result of fracture of the vertebra, but of the force which was great enough to cause the fracture—such cases must cause us to believe that even less severe trauma may produce cord lesions, though of less degree. If the paraplegia disappears after a period, it is quite possible that organic lesions, such as small hemorrhages and areas of necrosis, may have been present. The recuperative power of the spinal cord is astonishing. Probably the most remarkable case in evidence of this is the one given by Charcot[9] with illustrations. The spinal cord in a case of Pott's disease at one part was only one-third the normal size, or about the size of a goose quill, and was much sclerosed. Ascending and descending degeneration was well marked, but the functions, both sensory and motor, in the lower limbs had been perfect. The nerve fibers in this compressed portion were much below the normal number, and the gray substance was represented only by a single horn containing a few cells.

The gray matter is more apt to be involved by a hemorrhage than the white. We refer to Lamy's experiments in this connection. Perhaps hemorrhage may give the explanation of paresis and increased reflexes in some cases, acting by pressure on and not by destruction of the pyramidal fibers.

Indeed, experience has shown that not only the center of the cord is more apt to suffer in trauma, but the center of the cauda equina is subject to the same laws. Bruns[10] states that in tumor or trauma of the cauda, even at the upper part, the sacral plexus suffers more than the lumbar, and at first usually it alone is affected.

When in many of these mild cases of "railway spine" restoration of function occurs, it is probably frequently due to absorption of the hemorrhages, relief of pressure, possibly vicarious action of the nerve fibers still sound, and restoration of function to paralyzed fibers.

Undoubtedly in many of these cases there is an element of neurasthenia, but it seems to us that sometimes too much is classed under neurasthenia. Obersteiner[11] has abstracted a case of spinal concussion published by Struppler. The patient died five weeks after a fall on the back. The lesions found in the cord were softening, diffuse degeneration almost throughout the entire length of the cord, and descending degeneration of the lateral pyramidal tract. Obersteiner remarks that in consequence of the teaching of Charcot con-

6 Pfeiffer. Centralblatt für allgemeine Pathologie, September, 1896.
7. Dercum. The Journal of Nervous and Mental Disease, 1892.
8. Higier. Deutsche Zeitschrift für Nervenheilkunde, vol. ix., 3-4.
9. Charcot. Œuvres complètes, vol. ii., p. 103.
10. Bruns. Archiv für Psychiatrie, xxviii., Heft 1. 1896.
11. Obersteiner. Wiener klinische Wochenschrift, No. 30, 1896, p. 694, and Medizinische Jahrbücher, 1879.

cerning traumatic neurosis, the opinion held by himself and others regarding organic changes in some cases of spinal concussion has been forgotten. He, as far back as 1879, reported the microscopic examination of a case of spinal concussion.

Schmaus[12] has examined the cord from some of these cases of traumatic back at different periods after the occurrence of the accident, and has found very positive changes—such as areas of softening, accumulations of granular corpuscles, gliosis, cavity formation, primary degeneration of the pyramidal tracts, and, in one case, round cell infiltration. In one case he speaks of infraction of the vertebral column, but the alterations he describes were also found when the vertebral column was uninjured, and these alterations are similar to the changes noted by us.

Schmaus produced concussion of the spine in animals. He found in these cases swollen axis cylinders and some destruction of the myelin. In one case he observed a focus of softening, in two cases gliosis in the gray matter, but rarely did he find hemorrhage of any amount. The spinal vessels in all his experiments were congested. From these investigations it was positively determined that organic lesions may follow spinal concussion, and it was seen that the alterations produced experimentally represented earlier stages of those changes which he had found in man.

According to Schmaus, the important change is direct traumatic necrosis of the axis cylinders. He believes that if the trauma is not very severe the fibers are only functionally altered and may recover, and even if the trauma has been very violent the degeneration found at the examination does not represent all the fibers which have been deprived of function, for certain of these are in the earlier stages of the degenerative process. Bikeles[13] also has found destruction of the myelin sheaths after concussion of the brain in animals.

While we are not treating of commotio cerebri, we may, nevertheless, mention that Koch and Filehne, Witkowski and Polis have shown that cerebral concussion may exist without visible organic changes. On the other hand Duret, Bright, Rokitansky, Nélaton, Beck, etc. (quoted by Michél[14]), have found numerous capillary hemorrhages in the brain, and have attributed the symptoms observed to these. It is quite possible that some of the cases in which organic lesions were absent were not studied by the finer methods of microscopic technique, as Michél suggests. This author also calls attention to the fact that Bollinger first showed that the signs of commotio cerebri may not develop for some time after the trauma. The trauma causes necrosis and alteration of the vessels, and in consequence of these changes late hemorrhages occur.

Interesting in this connection is the case reported by Hirschl.[15] Dementia and hemiatrophy of the tongue developed in consequence of trauma. Both conditions were supposed to be due to minute hemorrhages. The statement that the hemiatrophy of the tongue was the result of organic changes will hardly be disputed.—New York Medical Journal.

12. Schmaus. Münchener medicinische Wochenschrift, 1890. p. 485, and Virchow's Archiv, 122, 1879.
13. Bikeles. Arbeiten aus dem Institut für Anatomie und Physiologie. Obersteiner, Heft III.
14. Michél. Wiener klinische Wochenshrift, No. 35, 1896.

Judgment in Surgery.

The following is from the columns of the American Therapist:

It is an acknowledged fact that greater advances have been made in recent times in surgery than in general medicine. A quarter of a century ago nobody dreamt it possible to achieve the brilliant results which are now of every day occurrence in abdominal surgery. Ovariotomies, hysterectomies, appendectomies are now looked upon as ordinary operations with a trifling mortality. Can general medicine—with the exception of the serum treatment for diphtheria—show any such positive advance in diseases like tuberculosis, pneumonia, typhoid fever, gastro-enteric disturbances, or the contagious diseases of childhood?

It must always, however, be remembered that surgery never "cures" in the sense of a "cure" expected in general medicine. In surgery "cure" means mutilation, destruction and the presence of a scar of cicatricial tissue to attest forever the injury done by the surgeon's knife. It is well, therefore, to hesitate before recommending surgical intervention. Certain conditions—injuries, abscesses, new growths, etc.—not only justify but demand the use of the knife. Other conditions—pleuritic effusions, dropies, intussusception—often get well without operative interference.

Hence it is that the element of judgment ought to go hand in hand with mechanical skill. The skillful plumber discovers the leak in the pipe before proceeding to repair it. The skillful surgeon makes a careful diagnosis of his patient's general as well as local condition before beginning to operate. The best surgeons—that is, those exercising the best judgment—have usually been graduated from the ranks of the general practitioners of medicine. The best surgeons are not necessarily those most skillful in the technical details of their work, but those of careful habit and mature judgment. Such men are not apt to have the largest list of cases or most brilliant series of results, for they do not operate every case, and are apt to first try methods used by the general practitioner of medicine. Such men do not

15. Hirschl. Wiener klinische Wochenschrift, No. 26, 1896.

operate every hernia, remove every hardened testicle, or every ovary which seems somewhat enlarged. Such men are willing to work with pessaries before fixing the uterus to vagina or abdominal wall, and will not do hysterectomy because the uterus has a tendency toward chronic catarrh or prolapsus. Such men rather leave these cases to the general practitioner to treat on well-tried and satisfactory lines.

In operative work the surgeon with judgment will act on "conservative" principles. On opening the abdomen he will only remove hopelessly diseases tissues and will leave inoperable cases severely alone. This all requires profound diagnostic knowledge as well as "technique." If the vaginal route is safer for the patient he will select it in preference to opening the abdomen from above. If a finger or limb can be saved in part he will sacrifice his love for a beautiful stump and save a useful structure. If the ovary is only atrophied or slightly cystic he will leave it alone. If the patient has a slight pain over the appendix—a catarrhal appendicits—his love for a large series of "appendix operations" will yield to his judgment and he will turn the case over to the physician. Thus will surgery best subserve its functions in the diseases of mankind.

Fracture and Dislocation of the Second Cervical Vertebra as a Result of Muscular Effort.

Lobingier (Colorado Medical Journal,, February, 1897, p. 41) has reported the case of a machinist, twenty-one years old, and an experienced athlete, who in the performance of some feat on the horizontal bar fell limp and lifeless. In "snapping under," instead of easily emerging on the opposite side of the bar and finishing in a graceful vault, the man's head fell upon his chest and his body forward, semiprone. No sound was heard by the observers, as of the snapping of bones or ligaments, and it was insisted that his head struck nothing in passing beneath the bar. Examination of the cervical spine failed to disclose any deformity. The reflexes were abolished and only feeble cardiac activity persisted. The vertebral column was adjusted so as to prevent injury from a possible fracture, and artificial respiration was instituted and maintained for an hour. Respiratory and cardiac stimulants besides were given hypodermically and repeated at frequent intervals. Electricity was employed and inhalation of oxygen practiced. Despite every effort the patient could not resuscitated and death took place. Upon post-morten examination no cerebral lesion was discovered, but the second cervical vertebra was found to be thrown forward and to the right on its articular bearings for fully an eighth of an inch. The anterior common spinal ligament was ruptured through its three layers. The lip of both the second and third vertebræ was broken off irregularly along the line of junction. On the right side this fracture extended into the inferior articular facet of the second vertebra. On removing the spinous process of the second vertebra the cord was found soft and degenerated for a distance of an inch. The greatest change in the cord existed at the point opposite the articulation of the second with the third segment of the spine, showing that the pressure of the odontoid process on the cord would not fully account for the softening. The neck of the patient measured sixteen inches in circumference and was intensely muscular, with an unusually large amount of ligamentous and aponeurotic tissue. It is believed that the lesions found resulted from violent contraction of the left posterior group of cervical muscles, with simultaneous and co-ordinate relaxation of the right anterior group, allowing the head to drop violently backward and to the left.—Medical Record.

Massage in the Treatment of Fractures.

At a recent meeting of the New York Academy of Medicine Dr. George Woolsey read a paper upon the above subject, of which the following is a brief abstract from the Medical Record:

Until very recently less advance had been made in the treatment of fractures than in any other field of surgical practice. Comparatively recently the ambulatory treatment had received much attention. He had tried it in a number of cases, especially in fractures of the leg, and with considerable satisfaction. Under it the general condition of the body was maintained, and it was especially useful in the aged and alcoholic, in that it shortened their stay abed. It prevented stiffness of joints, allowed the patient to go to business, and cleared the hospital wards. It did not shorten the period of healing. Keeping the patient abed, as was done under the rest-and-fixation treatment, had an ill effect upon the health and weakened the muscles. These objections were overcome by massage treatment. Dr. Woolsey, in presenting the claims for this method, quoted freely from Championnière, its champion. Among the effects of massage were the relief of pain, diminution of swelling; secondary œdema, which under other treatment often came on after five or six weeks, was conspicuous by its absence; the muscles were kept from atrophy, the skin remained soft; the callus was stronger, the general health was maintained. When there was great mobility, immobilization could be applied until consolidation began; then massage should be commenced. In other cases massage could begin at once, and if a splint was applied it could be removed during massage once daily. Massage should be prac-

ticed in the direction of the return blood current, superficially with the whole hand, or deeply with the thumb and finger, with light movements which would relieve, not cause, pain and reduce the swelling. The best lubricant was olive oil. The duration of the seances was fifteen minutes. The treatment was more especially indicated in fractures near joints. Dr. Woolsey had begun treatment by massage rather cautiously a year ago, and had not allowed his patients to get up quite so early as do French and German surgeons. Most of his cases had been Pott's fracture, some of Colles', etc. One writer had had considerable experience with combined ambulatory and massage treatment, and considered it ideal. Dr. Woolsey's own results from massage had been so perfect that he had come to make it the routine treatment in fractures near joints. Bony union was obtained by the end of the third week. The patient was allowed to get up from the nineteenth to the twenty-fifth day, and within two or three days was able to walk about without a cane. The average stay in the hospital had been twenty-one days. Massage treatment was recommended by the author in fractures near joints, to be applied daily for fifteen minutes until consolidation occurred, say the first ten days. In fracture near the middle of the limb, he would immobilize and then let the patient go about on crutches—the ambulatory treatment; and carry out the same treatment in fracture of the neck of the femur in the aged.

In the discussion which followed Dr. Howard Lilienthal said he had employed the massage treatment in three cases of fracture of the patella, with excellent result. All the patients were kept walking after the tenth day.

Dr. A. E. Gallant testified to the excellent results of massage in the treatment of sprains, and he had no doubt it would be equally efficacious in reducing swelling and pain in fractures. Under the teaching of Dr. Van Arsdale he had learned to employ it from the moment that sprain occurred, commencing far above the sprain, rubbing the limb gently at first and toward the body, gradually reaching the injured joint and rubbing along the grooves instead of on the bones.

Traumatic Hæmarthrosis of the Knee-joint

John O'Connor, of Buenos Ayres, recommends that the following steps be taken in the treatment of this class of cases.

1. In cases of effusion into the knee-joint an aspirating needle should be introduced in order to arrive at a correct diagnosis.

2. If blood is present an incision should immediately be made into the synovial pouch, and every particle of blood and clot removed; in case of fracture into the joint, the fragments should be examined, and, if necessary, reduced and fixed.

3. A gauze drain should be inserted for a few days in order to make certain that no further re-accumulation shall take place; and, when it is evident that there is no further danger of this occurring, the external wound should be closed by "waiting" sutures.

4. When union is sufficiently firm active movement should be encouraged; and when this can be painlessly executed, then, and then only, is massage a most useful adjunct in restoring the muscles to their normal condition. —Glasgow Medical Journal, December, 1896.

The Ritual of Abdominal Operations.

The writings of Mr. Frederick Treves are always entertaining and suggestive. A recent review of the surgery of the peritoneum, published in the British Medical Journal, begins with a criticism of the "ritual of an abdonimal operation." Mr. Treves ridicules the extensive preparations made in many hospitals for the performance of surgical operations, especially for those within the peritoneum. He says: "Those who come after us will read with interest of the operating theater built like a diving tank, of the glass table for the patient, of the exquisite ceremonial of washing on the part of the operator, of the rites attending the ostentatious cleansing of the patient, of the surgeon in his robes of white mackintosh and his india-rubber fishing boots, and of the onlookers beyond the pale who are excluded with infinite solicitude from the sacred circle, as septic outlaws."

"This exhibition," continues Mr. Treves, "may be scientific, but it is no part of surgery; it is more allied to a fervent, idolatrous ritual brought down to the level of a popular performance. Those who have been led into these uncomfortable extravagances are, no doubt, honestly assured that they are carrying out the 'strictest antiseptic precautions,' but in blindly effecting this end they appear to forget what is the prime purpose of the art of surgery. Can this extreme demonstration be necessary? Is it not piling Pelion on Ossa and slaying the already slain? The surgical ritualists appeal to the infallible tests of the bacteriological laboratory, and bring forth as conclusive evidence an array of cultivations and of inoculated tubes. Most English surgeons, on the other hand, are content to appeal to the test of the patient, and to bring forth records of results." Continuing in the same strain Mr. Treves advocates a kind of surgical preparation which we have insisted upon for a long time—a preparation which is at once simple and effective. The surgeon, who of necessity understands the principles of bacteriology (since no surgeon can successfully practice

without this knowledge), carefully bears in mind and carries out the doctrine that nothing that can convey bacteria is to be introduced into the wound. If the operator and his assistants bear this in mind always and carry out the idea systematically in practice, results will be all that can be desired. Unfortunately this is not always possible, and the reason for insistence upon every detail that is necessary, and even many that are not, is to prevent accidents of a septic character due to thoughtlessness on the part of nurses and assistants.

The conservative English for a long time did not accept Lister's theories; and many having accepted his theories have been unwilling to give them up, or to give up the details of surgical practice which Lister prescribed; hence it was that in February, 1895, the carbolic acid spray was still used in Guy's Hospital, London, only a mile or two from the London Hospital, in which Mr. Treves practices. An unwillingness to adopt new ideas is no less culpable when those ideas seem to be based upon reason and when no injury can result from them, than the refusal to give up ideas which are shown to be fallacious.

We willingly admit that the English surgeons, at least in their public clinics, do not err on the side of too much antiseptic or aseptic caution!—Medicine.

Surgery of the Lung.

The following resumé of this interesting subject appears in a recent issue of the Medical News over the signature of Dr. Andrew J. McCosh:

In the year 1710, nearly two centuries ago, Baglivus suggested that cavities in the lung might be successfully treated by operation. During the next century and a half, an occasional operation was performed for the relief of pulmonary affections, but the surgery of the lung was unsystematic and largely experimental until Graux in 1850 reported the results of thirteen operations. All these cases were, however, unsuccessful, and these results, combined with other similar failures, retarded the progress of pulmonary surgery for another quarter of a century.

A fresh impulse was given to this branch of surgery some fifteen or twenty years ago, when numerous successful experiments on animals, where portions of the lung, and even entire lobes, were excised, led to the hope that the same success might follow operations on the human lung. This expectation, however, has not been fully realized. Especially is this true in regard to tubercular processes which would offer a vast field for operative interference, were success to follow such treatment. In this class of cases there seems to be but little hope of benefit to be derived from excision of tubercular foci. Reclus, in a most admirable address which he delivered before the French Surgical Congress in 1895, said: "Resection of the lung for tubercular disease seems to me condemned past appeal." This judgment may be somewhat too severe and yet it probably expresses the view of most conservative surgeons on this subject.

The results of simple incision into tubercular cavities have been somewhat more favorable. A number of patients have been benefited by this procedure, and in certain cases this operation seems indicated. A successful termination must be exceptional, however, as the original focus of disease must still remain, and probably other foci also. Reclus reports eight such operations upon an equal number of patients, only two of whom died, while five were improved or cured. He states, however, that all were carefully selected cases. Laufert and Worth have calculated that out of 100 such cases, 5 die at once as the result of operation, 10 die within a fortnight, 15 more inside of a month, 10 are improved, and zero represents the number of recoveries. Paget reports 24 operations, with 9 deaths, 5 recoveries and 5 improvements.

Operation for pyopneumothorax, as the result of tubercular ulceration, has been performed on a number of patients, in two of whom the opening was successfully closed by suture. The difficulty, however, of locating the perforation must be great, and at best temporary relief only can be afforded.

The results of operation for growths in the lung are equally disappointing. When carcinoma or sarcoma occurs primarily, the growth is in all probability so extensive before the diagnosis can be made that extirpation is impossible. In some cases where the malignant tumor has extended to the pleura and lung from the chest it is possible that extirpation might be successfully accomplished.

In abscess, gangrene and hydatid cysts, sufficient experience has accumulated to enable us to judge approximately of the risks of operation and of the chances of recovery. The results are becoming more and more favorable and undoubtedly will be still more encouraging as soon as physicians can be convinced that operation is not attended with great risk and that it offers a fair chance for recovery.

The results of operation for pulmonary abscess are certainly full of promise. Thus Fabricant reports 38 cases, with 29 recoveries and 9 deaths. Reclus reports, out of 23 operations which have been performed within the past ten years, 20 cures and 3 deaths. The old idea that adhesions between the lung and parietal pleura were a requisite for successful operation is happily passing into oblivion. Adhesions are unquestionably of great advantage. When they exist the danger of infecting the pleural-cavity and thus exciting a pyopneumothorax is very slight and the in-

cision into the abscess cavity is a comparatively simple operation. Many successful operations have been performed, however, where there are no such adhesions, as, for example, the cases recently reported by Smith and Frederick Treves in the Lancet, and by Northrup in the N. Y. Medical Journal. If adhesions are absent the operations can be carried out in two stages, at the first, suturing the two pleural layers; at the second, opening the abscess after a delay of a few days. Unfortunately, however, such delay is generally inadmissible. It means death. The abscess must be opened at once. In certain cases the parietal pleura may be sutured to the lung, but generally the patient's condition is such that the operation must be rapidly completed, the pleural cavity being protected as well as possible by sponges and gauze.

In gangrene the mortality without operation is about eighty per cent. In certain cases of diffuse gangrene operation is out of the question, and the case is hopeless. In circumscribed gangrene operation offers to the patient a fair chance of recovery. Excepting a few cases of gangrene occurring in young subjects, where the patch is small and near the apex, it is a question whether operation should not be advised as soon as the diagnosis is made in every case of circumscribed gangrene, where the general state of the patient or some intercurrent disease does not render all treatment hopeless. As in abscess so in gangrene; the operation, if otherwise indicated, should be performed, adhesions or no adhesions.

Another reason for delay which is sometimes advocated is that operation is not indicated until after the stage of consolidation has passed and deliquescence begun. The latter stage, however, is generally reached before the diagnosis has been made. Of course, the patient may recover without operation, but the danger of sepsis or the conversion of a circumscribed into a diffuse gangrene more than counterbalances the risk of an operation. These risks are not very great, as may be judged from the statistics of Heydweiller, who collected 40 cases treated by operation prior to 1892, with 22 recoveries, 4 improvements, and 14 deaths. The more recent cases of Reclus number 14 operations, 11 of the patients being cured, 1 being improved, and only 2 having died.

In cases of bronchiectasis the results of operation seem to be less hopeful. More than one cavity generally is present. One may be incised and healed but others are left. Reclus reports 12 operations, 8 of which terminated fatally, 4 of the patients being improved, but none cured. Paget reports 5 cases, all of whom were improved, but he adds that all were exceptional cases. The conclusion of Truc seems correct: "When the cavity in the lung is the essential lesion, when the symptoms of septic abortion dominate the scene, when there is high fever and the patient is shaken by cough and exhausted by profuse expectoration, then without raising vain hopes and simply to alleviate suffering we may have recourse to incision of the lung. Now and again a marked improvement has been noted."

The results of operation for hydatid cysts have been most satisfactory, indeed, more so than for any other pulmonary affection. Paget has collected 45 cases thus treated, 37 of the patients being cured, and 6 having died. In this condition operative interference is always indicated.

The Twelfth International Medical Congress.

Will be held at Moscow, Russia, August 19-26, 1897. J. Klein, M. D., president; W. K. Roth, M. D., secretary-general.

AMERICAN NATIONAL COMMITTEE.

J. S. Billings, M. D., New York; Frank P. Foster, M. D., New York; Claudius H. Mastin, M. D., Mobile; S. Weir Mitchell, M. D., Philadelphia; Charles A. L. Reed, Cincinnati; George B. Shattuck, M. D., Boston; F. J. Shepherd, M. D., Montreal; George F. Shrady, M. D., New York; W. S. Thayer, M. D., Baltimore.

A. Jacobi, M. D., 110 West Thirty-fourth street, New York, chairman.

New York, March 10, 1897.

In a letter dated Moscow, February 14, the secretary-general, Professor W. K. Roth, communicates the following facts for the information of the American physicians who intend to participate in the Twelfth International Congress, which is to be held in Moscow from August 19 to 26.

The transatlantic steamship companies refuse one and all any reduction of the usual charges. In their replies, most of which are couched in courteous language (the originals are in the possession of the undersigned), they admit the existence of a trust, or contract, or agreement, which prevents them from lowering their prices; a few are so polite as to express their regrets.

Reductions of fares on Russian railroads are expected shortly. The French, Spanish, Swedish and Hungarian railroads promise a reduction of 50 per cent; so do the Italian, for a distance of 500 kilometers; less (down to 30 per cent) for shorter distances. The Mediterranean lines (Messageries Maritimes, General Italian Navigation Company, Austrian Lloyd) grant from 25 to 50 per cent.

The undersigned chairman is not authorized to issue certificates of any kind in favor of congressists. He will try to ascertain, however, in which way their movements may be facilitated, and may receive a reply in the second half of April. Extracts of papers to be

read before any of the sections ought to reach the secretary-general before June 1, in order to be printed in the preliminary volume.

A special prospectus containing the final details referring to traveling, lodging, festivities, etc., is promised for a near future. It will be communicated at once to the medical journals and to the press of the country.

A. JACOBI.

Notices and Reviews.

A Treatise on Surgery. By American Authors. Edited by Roswell Park, A. M., D. M., Professor of the Principles and Practice of Surgery in the Medical Department of the University of Buffalo, etc. Volume I, General Surgery; Volume II, Special or Regional Surgery; 8 vo., pp. 1,600, with over 800 illustrations. Philadelphia and New York: Lea Bros. & Co., 1896.

Within the past few years the profession has been favored by the appearance of several new works on surgery. Some of these have partaken of the nature and scope of hand-books, others of text-books and still others of treatises and encyclopedias. While each seems to have met the wants with a considerable degree of success, it has been left to Dr. Park and his collaborators to present a work which is both concise and reasonably complete, as well as both satisfying and authoritative.

The one great aim of the editor seems to have been the presentation of a thoroughly up-to-date work on modern surgery in its broadest sense. That he has succeeded to a remarkable degree in attaining the desired result must be conceded by every reader of these two volumes.

The work of the contributors has unquestionably been, in general, most excellently done, while the work of harmonizing the pathology, principles and practice of thirty prominent surgeons and presenting the great amount of material in one grand, harmonious system, has been so satisfactorily executed that to Dr. Park's enviable reputation as a pathologist, as a surgeon and as a teacher, we can add that of being a most successful author and editor.

Those who are acquainted with his clear, concise, forcible style of presenting a subject will be pleased to find the impress of his own personality in every part of the work.

Where the material has been secured from so many sources there naturally is some repetition and possibly disproportionate space has been given to some subjects, but considering the character of the work, we do not believe any serious detriment is occasioned thereby in this instance. Selections and limitations are purely matters of judgment and in that respect we are willing to abide by the decision of the man who has given the subject special consideration.

The systematic way in which every subject is presented and the free use of heavy-faced headings and italics, makes the treatise more easy of consultation and of much greater value to the student of surgery. Our greatest admiration is occasioned by the character of the pathology presented, which is generally of the advanced modern type. In this particular, especially, do we note a degree of uniformity and excellency which is peculiar to this system of surgery. The scope of the work is so great that the consideration of the chapters in detail has appeared inadvisable.

The illustrations (both by the old and the new processes) are generally satisfactory, and with some exceptions, they do illustrate the text. While this is generally applicable, we desire to especially mention the chapter by Gerster, which is so ably presented by illustrations nearly exclusively. The colored plates are generally good, but as is usually the case, they are entirely too highly tinted. While the work is quite free from typographical errors, there are some; cuts Nos. 190 and 191, have evidently been changed, while cut 196 would be more readily appreciated if placed in the same position as 195, with which it bears a close relationship.

As a whole, this work is most satisfactory, and is fortunately of that size that both the medical student and the practitioner will find the most important facts of modern surgical principles and practice easy of access.

Notes of Societies.

American Medical Association.

The forty-eighth* annual session (fiftieth anniversary) will be held in Philadelphia, Pa., on Tuesday, Wednesday, Thursday and Friday, June 1, 2, 3 and 4, commencing on Tuesday at 10 a. m.

ADDRESSES.

"The Presidential Address," Nicholas Senn, M. D., Chicago. "Address in Surgery," Wm. W. Keen, M. D., Philadelphia. "Address in Medicine," Austin Flint, M. D., New York. "Address in State Medicine," John B. Hamilton, M. D., Chicago.

COMMITTEE OF ARRANGEMENTS.

H. A. Hare, M. D., 222 South Fifteenth street, Philadelphia.

OFFICERS OF SECTIONS.

Practice of Medicine.—J. H. Musser, M. D., Philadelphia, chairman; J. T. Priestley, M. D., Des Moines, Iowa, secretary.

Obstetrics and Diseases of Women.—Milo B. Ward, M. D., Topeka, Kan., chairman;

*There were no meetings held by the Association during the years 1861 and 1862.

Geo. H. Noble, M. D., Atlanta, Ga., secretary.

Surgery and Anatomy.—Reginald H. Sayre, M. D., New York, chairman; Bayard Holmes, M. D., Chicago, secretary.

State Medicine.—Elmer Lee, M. D., Chicago, chairman; Louis Faugeres Bishop, M. D., New York, secretary.

Ophthalmology.—G. E. de Schweinitz, Philadelphia, chairman; H. M. Starkey, M. D., Chicago, secretary.

Diseases of Children.—Jas. A. Larrabee, M. D., Louisville, Ky., chairman; H. E. Tulley, M. D., Louisville, Ky., secretary.

Dental and Oral Surgery.—R. R. Andrews, M. D., Cambridge, Mass., chairman; Eugene S. Talbot, M. D., Chicago, secretary.

Neurology and Medical Jurisprudence.—W. J. Herdman M. D., Ann Arbor, Mich., chairman; Chas. H. Hughes, M. D., St. Louis, Mo., secretary.

Dermatology and Syphilography.—A. Ravogli, M. D., Cincinnati, Ohio, chairman; T. C. Gilchrist, M. D., Baltimore, Md., secretary.

Laryngology and Otology.—Wm. E. Casselberry, M. D., Chicago, chairman; D. Braden Kyle, M. D., Philadelphia, secretary.

Materia Medica, Pharmacy, and Therapeutics.—W. B. Hill, M. D., Milwaukee, Wis., chairman; F. Woodbury, M. D., Philadelphia, secretary.

Physiology and Dietetics.—A. P. Clarke, M. D., Cambridge, Mass., chairman; Ephraim Cutter, M. D., New York, secretary.

WM. B. ATKINSON, M. D.
Permanent Secretary.

The Florida State Railway Surgical Association.

An adjourned meeting of the State Association of Railway Surgeons was held at Palatka, Fla., April 22. The following officers were elected for the coming year:

J. Harrison Hodges of Gainesville, president; W. L. Hughler, Cocoa, first vice-president; F. P. Petty, Sanford, second vice-president; J. M. Jackson, Jr., Miami, secretary and treasurer.

Executive Committee: Drs. S. G. Worley, St. Augustine; W. H. Cyrus, Palatka, and R. P. Izlar, Waycross.

As has been frequently noticed in the daily press, Dr. Nicholas Senn has offered his services to the Greek nation during the continuance of the war with Turkey. He is a great lover of Grecian history and literature and offers his services to the Greek army without expectation of reward, the only stipulation being that he be officially recognized by the government. If his offer is accepted he will sail upon the first vessel leaving for the Mediterranean.

Communications.

To the Members of the Medical Profession.

I would be pleased to have an expression of opinion from you, either personally or through some medical journal, as to the relations of the lay publishing firms of medical journals and the profession. The request is suggested by the fact that Messrs. Wm. Wood & Co. of New York refuse to permit the editors of the "American Year-Book of Medicine and Surgery" to use in our abstracts of medical progress articles and illustrations first printed in the Medical Record and the American Journal of Obstetrics.

This decision seems to be wrong for the following reasons:

1. It prevents the dissemination of medical knowledge. The Year-Book condenses, systematizes and criticises the year's medical work in a shorter space and more permanent manner than the journals, and has thousands of readers no single journal can claim or hope to reach. Every physician writes and publishes articles in order that every member of the profession may, if possible, learn of his work, and that science and progress may thus be furthered and humanity benefited. To interfere with such dissemination of our literature in reputable publications is, I think, discourteous and unjust to the profession and an injury to medical science.

2. This injustice and injury to medicine becomes all the more striking when physicians do not receive a cent of pay for contributions, from the publication of which the lay publisher is supposed to make considerable financial profit.

3. No other publishers in the world, not even those who pay authors for their contributions, have in the least objected to our reproduction of quotations, abstracts and illustrations from their journals.

Do you wish to limit the dissemination of your contributions to medical science by such an exclusion of them on the part of publishers from reputable publications? Is this literature the property of yourself and of the profession, or not? Does your gift of it to a journal make it forever the private property of the publishers of that journal? Is it not rather a loan for temporary use only?

Will you not hereafter demand that there be printed with your article a statement that the right of abstracting the text or reproducing illustrations is guaranteed? Sincerely yours, GEORGE M. GOULD.

119 South Seventeenth St., Philadelphia, Pa., December, 1896.

THE Railway Surgeon

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THE CHOICE OF AN ANÆSTHETIC.*

BY ALBERT I. BOUFFLEUR, M. D.

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The subject upon which I have been requested to prepare a paper is such a large one, if it be thoroughly considered, that it is quite impossible for me to properly present it in the few minutes which have been assigned to me. There has been a vast amount of experimentation and observation in the effort to solve this question, and the many contributions to the literature of the subject contain much valuable material which is deserving of more free quotation and individual reference than my time will permit of.

The general subject of anæsthesia and anæsthetics is indeed a broad one, and the more one studies it the more he is impresesd with the great variance of opinion, not alone as to the choice and mode of administration, but as to practically every minute phase of their physiological effect and therapeutic action.

Whether we shall use a local or a general anæsthetic is a question which receives considerable attention, but deserves a great deal more than is given to it. The introduction of the use of cocaine was a great boon to the cause of local anæsthesia, and notwithstanding the fact that a great variety of minor and major operations have been performed under its wonderful benumbing effect, its use, which promised to become so universal, was soon checked and has since been limited by the frequent occurrence of alarming symptoms and even death. The impetus given to the subject has, however, not been lost, for we find it still used extensively but more carefully, and whatever favor cocaine has lost bids fair to be recouped by the Schleich method, which is a happy combination of the mechanical and therapeutic means of producing local anæsthesia. As another essayist will present this subject in extenso, I will leave it with the statement that there is unquestionably a large and growing class of cases in which modern methods of producing local anæsthesia are positively indicated in preference to our present methods of producing general anæsthesia.

The choice of an anæsthetic for the production of general anæsthesia is one of the most serious obligations of the surgeon, but, strange to say, it is perhaps given the least consideration of any part of the surgical procedure. In the majority of operations the entire danger is that from the anæsthetic, and yet as students but few of us received any practical, and, in fact, very little theoretical instruction in the choice of anæsthetics, their proper administration, etc. Such being the case, I hardly think it to be wondered at that many practitioners are undecided as to the choice of an anæsthetic in a given case, and naturally drift into the routine of using the same anæsthetic in every case or of employing the one which happens to be at hand. It is needless to say that such a practice is both unscientific and dangerous, and in my opinion it is one of the prime factors in producing the great mortality rate of anæsthesia.

The choice of an anæsthetic should depend upon the safety of the agent, the condition of the patient, the necessities of the operation and the attending circumstances. The first is in reality the prime factor, while the others are secondary, and in a measure are included under the first heading.

The war of opinions between the advocates of the various anæsthetic substances has not

* Read at a meeting of the Chicago Medical Society, April, 1897.

been allowed to abate by the death of the former leaders, but instead of the few, there are now many who take positive positions for or against the various substances, and especially as to chloroform and ether, which are the only substances admitting of general use.

Statistically there can be no question but that, as ordinarily administered, ether is by far the safer anæsthetic, and yet there are some extensive and well authenticated reports which demonstrate beyond the possibility of a doubt that in properly selected cases and when properly administered chloroform is quite as safe as ether. The following ratios are those given by men who have given the subject of anæsthetic statistics some special study, and it will be readily appreciated that there is great variance in the conclusions reached. There is no attempt at completeness, but merely to present a general list which includes the conclusions of practically all the principal tabulators.

RATE OF MORTALITY.

	Chloroform.	Ether.
Lawrie (3)	0 in 45.000	No report
McGuire (Civil War (4)	0 in 28,000	" "
Boudens (Crimean War) (2)	1 in 11,000	" "
MacEwen et al (2)	1 in 11.000	" "
Medical News (5)	1 in 3,749	1 in 16,675
Julliard (2)	1 in 3.425	1 in 14,987
Cole (Virginia) (1)	1 in 2.876	1 in 23,204
Andrews (Chicago) (1)	1 in 2,723	1 in 23,204
Gurlt (6)	1 in 2,647	1 in 13.160
Richardson (2)	1 in 2,500	No report
Henderson (7)	1 in 1,472	1 in 7,493
Lee (Chicago) (2)	No report	1 in 23,204
Oliver (8)	" "	0 in 29,500

The compilations from which the above ratios have been abstracted comprise over 1,000,000 chloroformizations and over 500,000 etherizations, with an average mortality rate of 1 to 3,355 for chloroform and 1 to 16,768 for ether. The figures of Baudens, McGuire and Lawrie are not trustworthy for general deductions, since the first two were administered in military practice under circumstances where accurate records could not be kept, while in the last instance they were made in a hot and dry climate; conditions most propitious for the safe administration of chloroform. Statistics compiled as has been the custom from all sources are very unreliable, since but a comparatively small proportion of the fatal cases and even a smaller proportion of the administrations are ever recorded, and added to these we have the effect of duplications, which is readily noted in the above figures. But notwithstanding their unreliability, when they in general verify a fact or statement they should be given some credence.

Scotch and German statistics are the most reliable, and even these differ widely in their ratios; a difference which can be accounted for by the methods of administration. The Germans are given to pushing chloroform narcosis, which may account for their high mortality rate, while the Scotch are credited with giving chloroform very carefully and to selected cases only. The fact that three prominent Scotch surgeons have observed the administration of chloroform over 34,000 times with only three deaths would certainly seem to establish the fact that when properly administered in selected cases it is a safe anæsthetic. On the other hand, general statistics compiled from various sources show the decided superiority of ether. Does this not indicate that generally too little care is manifested in selecting the case, or in administering the drug, more than that the danger of the substances are relatively so different?

An occasional death from chloroform can readily be accounted for by an idiosyncrasy on the part of the patient, just as well as with the use of ether. We find patients who are especially susceptible to the effects of morphine, cocaine, alcohol, and even quinine, and why should we not find some with an idiosyncrasy to chloroform or ether? The element of idiosyncrasy is an undeterminable one, and, therefore, the administration of any anæsthetic is always attended by some degree of danger. I do not wish to be understood as an advocate of the indiscriminate use of chloroform, because I am fully convinced that, as ordinarily administered, chloroform is several times more dangerous than ether. The annoying and even serious symptoms which sometimes develop during etherization cannot be compared to that awful condition of sudden primary syncope which stops our patient's heart in a single moment without any warning, and in the treatment of which our efforts are so commonly futile. One experience of this character has imbued me with the desire to impress upon every young physician, especially, as forcibly as words can, the gravity of his responsibility in using an anæsthetic. Fortunately the post-mortem in my own case demonstrated that there was no pathological condition which might have been

recognized before deciding upon the agent to be used, and, therefore, as the anæsthetic was being properly given by a skilled anæsthetizer, we must conclude that it was a case of primary syncope due to an idiosyncrasy of the patient to the effects of chloroform.

While the consensus of opinion in America favors ether as the safer anæsthetic, there are a great many surgeons who maintain that in properly selected cases, and in the hands of a skilled anæsthetist, chloroform is as safe as ether, and as it is quite universally admitted that its administration is easier and its after effects less serious than those of ether, they have good reasons for its general employment. The condition of the patient should receive careful attention, since it is an important element in determining the relative safety of the various anæsthetics. Ether acts as a stimulant to the vascular system and as a positive irritant to the respiratory and renal mucous membranes. It should, therefore, be avoided in patients afflicted with marked degeneration of the blood vessels and in those suffering with pulmonary or renal disease, etc.

Under the head of attendant circumstances I desire to especially mention the presence of a competent anæsthetizer. I believe there is as much propriety and demand for a specialist in this line as in any other department of medicine or surgery. The surgeons of Great Britain alone seem to have fully grasped this phase of the subject. The mortality tables of any operation show that in the hands of some operators, experts, if you please, the rate may have been most satsfactory, while with others who chanced to be less skillful, or from unavoidable reasons, it was very bad. Because the results were unfavorable in the hands of one, is no reason why all should condemn any procedure. As an illustration: Because some of us may not possess the skill to successfully catheterize the ureters is no argument whatever that the operation of nephrotomy should invariably be performed to the exclusion of ureteral catheterism in determining the source of a pyuria. The professional anæsthetist should be encouraged in his specialty, and when we have the aid of his skilled services our mortality rates will improve.

When a large number of patients are to be anæsthetized, and especialy when we are unable to make careful examination of the urine (e. g., when many people are injured and require immediate attention as the result of a railway wreck, riots or war at some remote point), chloroform is unquestionably the safer anæsthetic. The quickness of securing anæsthesia, the absence of the need of a cone, etc., and the rapidity of the recovery from its effects, and the rarity of annoying after-effects, are elements of undoubted superiority under such circumstances.

As no convincing arguments have been presented to successfully change the relative safety of ether and chloroform, we must conclude that ether is generally the safer anæsthetic, and especially so far as the immediate effects are concerned.

ETHER.

Ether is to be preferred under the following conditions:

1. When an unskilled anæsthetist must be employed, as is commonly the case, unless there be some positive contraindication.

2. In collapse or extreme prostration, as cases of prolonged suppuration with hectic or anæmic states, collapse following hemorrhage, etc., as it stimulates the heart, and but little anæsthetic is required. (2-9.)

3. In heart disease the dangers of any anæsthetic are increased, but ether is to be preferred to chloroform. In uncomplicated mitral regurgitation some claim that ether can be given as in any ordinary case. (10.)

4. In persons who are free from pronounced pulmonary and renal disease.

5. In persons who have recently been chloroformized, as repeated or prolonged chloroformizations cause changes in the myocardium and thereby greatly increase the danger of its readministration. (11.)

6. In rectal surgery it is generally preferred, as the degree of narcosis must be very profound; but chloroform is preferred by some operators as it does not cause so much local venous engorgement and is considered equally safe.

CHLOROFORM.

While chloroform is ordinarily more dangerous than ether, it is comparatively safe when skillfully administered to persons not afflicted with organic or functional cardiac incompetency, or who have recently been chlo-

roformized. It should be preferred in the following conditions:

1. In hot climates where ether is usually inapplicable and where the free circulation of dry and warm air increases the safety of chloroform.

2. Whenever a large number of persons are to be anæsthetized, and especially if we are unable to determine the condition of the kidneys.

3. In cases of nephritis.

4. In cases of aneurism and marked atheroma of blood vessels, where the struggling and vascular stimulation of ether might cause rupture, excepting when the circulation is disturbed by fatty degeneration or valvular disease of the heart. Senger reports a case of apoplexy occurring during ether anæsthesia. (17.)

5. In cases of obstruction in the respiratory tract or of acute or pronounced pulmonary disease, as bronchitis, pneumonia, phthisis or any condition productive of dyspnœa.

6. In cases requiring the use of the thermocautery about the head, or in operating near an open fire.

7. In children generally.

8. In weak and sickly persons who, as a rule, take chloroform with less danger than the strong and robust, because they struggle less and thus the strain on the heart is less.

9. In persons who have taken food within four hours.

10. In obstetrics, but not for post-partum operations. (1.)

11. In brain surgery, with morphine. Ether causes too much vascular excitement in the brain. The morphine prolongs the anæsthesia with but little chloroform. (2.)

12. In ophthalmic surgery chloroform produces absolute immobility more effectually and is commonly preferred to ether in those cases where cocaine is not indicated. (11.)

13. In operations about the mouth, jaws and respiratory tract, as the inhalation of a small amount, at intervals, suffices to maintain complete anæsthesia.

14. In abdominal surgery, as it relaxes the abdominal walls most completely, and the liability of coughing, struggling and vomiting are not so great. Some surgeons, and I believe the number is increasing, maintain that ether is to be preferred. (2-12.)

15. Only when a competent anæsthetist is at hand.

NITROUS OXIDE.

This agent is a very safe anæsthetic, as less than ten deaths are recorded in several million administrations. It is especially useful in dental and minor surgery requiring anæsthesia for but a few moments. In England it is customary to precede the administration of ether with nitrous oxide, with the effect of avoiding the struggling and excitement of ether.

ETHYL BROMIDE.

This agent is indicated in short operations, but its instability, impurities and frequent substitution by ethylene bromide, which is very dangerous, render its effects uncertain and its use dangerous. (1-13.) It is, however, held in favor by some prominent European and by a few American surgeons. (13-14-15-16.)

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1008 Fisher building.

A VALEDICTORY ADDRESS*

By W. B. Outten, M. D., St. Louis, Mo

Mr. Dean, members of the faculty and gentlemen of the graduating class:—To me this occasion bears much which is the essenced sacredness of duty. During the years we have been together our relation has been that of teacher and pupil. You, gentlemen of the class, are now about to go upon the active stage of life and become a part of historied present and future. The importance of the role you assume must abide in you alone; the proper interpretation of your own character by your-

*Delivered to the graduating class of the Beaumont Hospital Medical College, April 15, 1897.

selves will and must form any and all success you may achieve.

The saddest of all things in life to me is the fact that there are but few men who know themselves; nay, thou needst not go to the Antipodes, nor search unknown realms to demonstrate this doleful truth, but everywhere, all around, you will find that such is the fact. Aye, still more must I say, that the portentious enigma of this life looms into verity—that men, yea, worthy men, have lived a life utterly ignorant of their own inherent worth and capacity. They have studied the illimitable, the starry maze of the skies, the play of atoms, the ponderous domes of materiality, the vibrant cilia of the microbe, the imponderable forces of nature—but not that which to them is greater than all of these, the real virtue, worth and acting power of their own souls. True, indeed, with the freedom of man's mind and will comes the fateful freedom of mistake; hence I say to you—study thyselves more than all else in the world and with the perfection of interpretation must your success and happiness come. Aye, 'tis true as existence—as you know and appreciate yourselves, so will the world appreciate you; for amidst the winding corridors, the barred portals and the babbling buzz of an asylum will you oft find the man who studied a very world, but not his ownself.

The virtue of your existence must depend upon your usefulness to yourselves and the world around you. Your usefulness depends upon your industry—to halt and ignore labor is but to lapse into a living death, yea, the mummification of worthy function. Permit me to quote from Addison a strong and classical warning. He says: "In the school of Pythagoras it was a point of discipline, that if among the akoustikoi or probationers there were any who grew weary of studying to be useful and returned to an idle life, they were to regard them as dead; and, upon their departing to perform their obsequies, and raise them tombs with inscriptions, to warn others of the like mortality, and quicken them to refine their souls above that wretched state."

Not to labor is but to defy God and nature. Adapt yourself and your occupation to the kindly trend of nature, and she becomes an angel of help. She hath the sweetened charity and the benevolent function of a saint. Love her and aid her whenever you can, as in her help comes the consummation of purpose. Oppose her and she will cast you aside as the wind does the dried leaf in the autumn wood.

Now, then, gentlemen, in these parting hours let us hold communion in the broader, and, we will hope, in most virtued thought. To me it hath ever seemed that the greatest of all great studies in this world, as it always has been and must always be, is the study of the mind. And, yet, forsooth, I have often thought that mind has been more idly studied and less understood than anything else in this world. Intellect in man is that mental faculty which remembers, reasons and wills, and through this intellect comes man's capacity to know. It is the brain which begets this intellect, which thus enables us to know. I am also sure that it is the brain which makes us know, feel and will, and we know that man, brain and blood are the necessary factors which create and make mind or soul. I also believe that the germ cell of not only man, but of all life, is immortal; for we would find, could we but trace it, that the first germ cell which was brought to earth contained within it the formative and perpetuating energy which has made this world thrive in the marvelous growth of life, that this germ cell received not its perpetuating power and formative energy from this world, but that in its birth it was derived from within its very self; that to this very day it inheres within as it did from the very instant of its birth. Yea, with reverence, with thankfulness, with full and willing souls, we believe that this inherent force is exemplified in man through the heredity which is daily, yearly, yea, its millions of years accumulated a monstrous force—the ponderous wonder of man's intellectuality. Aye, we truly feel that we have no means of proof, but we have an abiding and constantly increasing stubbornness of faith, that it was the God-given force imparted to the first germ cell, which, as the rolling millions of years teem and overflow in the present, came from this God endowed cell. We cannot fathom its limits, but we can partly comprehend its myriads of wonders. Hence, we believe that man to-day represents the perfection of existence, the ponderosity of a constantly accumulating, wonderously endowed, formative and perpetuating force, given to us

by the Creator of man and this universe. Hence, then, in all of the vast creation by which man is surrounded, the grandest study, yea, the most profitable study, which we can indulge in, is, first, man, next the brain, next the varied, marvelous and transcendant wonders of a brain's function, mind or soul.

What care I whether I am an individualist or a universalist? Still less do I care whether I have within me certain elements pertaining to the idealism of Plato or Hegel, the pessimism of Shopenhauer, the pantheism of Spinoza, the materialism of Democritus and Epicurus, or the theism of Dascartes and Liebnitz; or whether I have a gift for modern socialism. These are as mockery to me so long as I am a healthy and happy man.

This theme of man is a wondrous theme, for variety hath not either soul or existence without it. With him variety is his divinity of joy and the clustering favor of consideration. Yet in the ardent rapture of my thought do I say, amidst all the things which have birth in life, or which abide upon this earth, or which have gazed at the stars and peered into the illimitable to ponder o'er planets—aye, over universe after universe, and anon, even who have strode upon our earthly crust and have overflowed in grandeur, purled in sweetness, welled in joy, or shook the ambient atmosphere in thrilling force by laugh or howl in beastial sound, in music's way or fiendish glee, or has o'er oceans breadth in ease and comfort sped, who inspects the ocean's depth, delves into the bowels of the earth, or the universe whose thought and force have made a circumambient air thrill and moan, or peal in wonder, that have bridled the lightning and turned its force to a plaything of curiosity and use, man is the greatest. I think that man, forsooth, is the only created divine mystery, and thus I say in bated breath and seeming dread to fully agree with Goethe, "That it is not good to meddle with divine mysteries." But, alas, and alackaday, what then darest man not meddle with! Gods, will I not ask thee this question, for it is but my manly right. Nay, upon my soul, I'll wager that thou must agree with me—what is there on this mundane sphere that dare revile and praise a man? True as gospel, yea, 'tis an eternal truth—man is that thing himself, which darest and dost eternally praise and abuse himself. Anon, I say, man is the only creature created, who is ever intent and determined upon telling all he knows. Nay, thou canst go from the fulsomeness of tragedy, from the grandeur of a universe, from the illimitable to the levity of comedy; yet thou canst not, for an instant, tell the depth and wonder of his speechful variety. Yes, 'tis true, man is but a bundle of nerves and nerves but well in habit. They are massed cords, brains and cells of habit; hence thou canst say in verity that man is a creature of fixed and established purpose, a fiend of involtunary tendency, an animal of repetition, a marvel of temperament. He grows in custom's shape, he forms as his nature prevails; and thus 'tis said that he can do no more than nature makes him. His soul's virtue then springs from his vital action; he is but the sum total of all life. Ponder, think and muse as you will upon the vital action of plants, mollusks, reptiles, birds and animals—place them side by side and in truthful view depict their every act—the essential feature of all these forms abide in man. Yes, picture as thou wilt, picture from now until doomsday and the doomsday beyond, and thou hast in man the limit and the wondrous contrariety of all life.

I do but believe that man is that mystery which collides with universal impossibilities. Is not man that mystery which holds all probabilities and possibilities? Yea, truly, he is the sum and essence of this universal life. Nay, then, I do but marvel and in wonder read page after page, theme after theme, word after word, which tells what man is. Then, forsooth, I think that if thou couldst tell what man is not, thou, indeed, would tell the Daedalian marvel and wonder of this world. Thus Paschal says, "What a chimera is man." Just as well will I say what a verity is man. Again he says, "What a singular phenomenon." Aye, thus I say, what a marvelous ocultation. Anon, thus he says, "What a chaos." To me he is the music of the spheres. Thus he says, "What a contrariety." Anon, so say I what a sameness, what a oneness. Anon, he says, "A judge of all things, yet a feeble worm." To me he is more than this, he is a powered intelligence, a perfection of force. Again, he says, "Shrine of truth, yet a mass of doubt and uncertainty." Yea, he is truth itself, a master of doubt, a creature of absolute certainty.

Thus he says, "At once the glory and scorn of the universe." To me he is still the glory and the dread of the universe. "If he boasts, I lower him," says Paschal. If thou beest a man thy superiority must be God-like to lower him. Thus again, he says: "If he lowers himself I raise him." Nay, then if thou canst do this thou art more than man. "Yea, I do contradict him." Yet, forsooth, thy very contradiction is the proof of thy inferiority and his superiority. Nay, then, here and this much do I agree with thee, Paschal: When thou sayest, "Till he learns, he is a monster incomprehensible mystery."

It is untrue that equality is a law of nature—nature has no equality, its sovereign law is subordination and dependence. Superiority in anything is the fate of creation and growth, nay, the will of God. How great is the crucible of time. Nay, 'tis the changeful phase of everything. 'Tis said of man: "Dust thou art." Yea, 'tis an ancient metaphor, perchance 'tis right, but this dust of man is that wondrous something which is eternally and forever put in the right place. Yes, 'tis living dust, immortal dust, that dust which connects time with eternity, life with immortality. Yea, still more is this dust the tremulous, brilliant atoms. Aye, the precious stones of a chemic world in which each atom combines rarer beauty, more wondrous construction than all the jewels of earth, containing within them the brilliant rays of the sun, the silver sheen of the moon, the vibrant light of the stars, the hues of darkness, the radiant elements of earth, and above all the divinity of God. Aye, this dust combines the forces of nature with the inconceivable, incalculable, imponderable force of God. Yea, each atom of man is the essence of materiality and of wisdom, of omnipotence and omniscience. Aye, true it is, this dust is the nucleus of all life, the hilum of earthly materiality and immateriality. Yes, this is man.

Now, then, lo and behold, this world is a reality outlined and limited. Yea, unceasingly grand and marvelous in its products, still the medium of a creator, for the Genesis of life's greatest and most illimitable force—mind. Man's brain is the organ of the highest, most powerful, most expansive, most utilitarian product of life. Man's brain viewed as matter is but a convoluted mass whose tenuity is frailer than the petal of a rose. Its form singularly varied in contour, depressions, crypts, teeming in nondescript multiple streaks of gray and white matter, quaint cavities, cornuaed chambers, holding within themselves expressionless oval whitened forms, rounded ivory-like looking orbs, hidden canals and wandering mazy depths. Man's brain is a seeming mass of mushy incongruities, whose frail fantastic construction, whose tottering, vacillating weight seems to court shapelessness and annihilation; compared to the immensity of its accomplishment it is the most amazingly insignificant looking substance made by God. Yet, in verity, it represents the grandest temple of this universe. This pulpy mass, this soft heap, represents the zenith and the nadir of God's created substances. Nay, then, no aggregate mass, but its ownself in this universe has like indescribable mystery and sublimity. Gaze on this dædalian pile, yea, ponder deeply, reverentially upon this tortiled paradigm. Inspect its intricate perplexities, its anti-type convolutions. Aye, place thy life's highest, best and most exalted mentality in its scrutiny. Yea, call to thy aid the grandest genius which has ever strode upon our mundane sphere. Yea, even bring a multitude of geniuses, and yet, forsooth, the combined intellect of this brainy legion can ne'er tell the wondrous limit of its power. True, in life a brain's labyrinthian mellow cast has welled in force so marvelously over and beyond its strange and petty size as to suggest that its each and every cell has connected itself with the ponderous and the infinite. Nay, I'll tell thee, and tell thee only too feebly, that this soft, entwined orb has been the dwelling of men whose thoughts have decided the earthly destiny of millions of its fellow creatures, and whose action seem to shake the frame of this globe. E'en so has it been the dwelling place of men who brought glorious knowledge, the rarest and sweetest comfort, the greatest and most splendid advancement to millions in the past and to millions yet to come. Still more hath this matrix held the souls of men who have soothed, blessed and given glorious hope to a sad and needful world. Yea, above all these, infinitely above all these has there welled within its etiolate convolutions every moiety of good or evil that has been shown in the worlds of trin-

ulated souls. Yea, it has borne within its depths the picture of every action since man's creation. Yea, 'tis the inconceivable, the incomprehensible, the connection of the finite with the infinite, of the impotent with the omnipotent. Now, then, here let me speak of this brain's function—mind. Mind to me doth seem a welling force between two eternities. The eternity that it came from in the past which brought it to earth and made it for a present life, and, we cannot think, nay, we reverentially trust, that we will never think that it can ever be lost in the future eternity to come. It is my hope, my inward belief, that it is the only indestructible force evolved in the making of the universe. Mind belongs to the living, whether in the past, present or future. Mind is our maker, God's first law, the real measure of materiality, the real and truest force of life. Perchance the force of all eternity. Mind is a force not moved by circumstance, but it hath moved circumstance e'er man was created. For it is that teeming power which stops not with time, dies not with death, but is an immortality, which dwells in space and accompanies life. 'Tis the guiding element of the starry spheres of heaven, the ruler of atoms, the welling power of our teeming earth. Mind is everywhere, mind is the creator, mind is the incarnation of truth—where'er may be its abode. Mind is the most improvable and expansive thing given to man, or that can be conceived of by man, its abode—the brain—is a mass of function, the profundity of activity. It hath an infinity of office, a ponderous power, wherein millions and millions of cells exist. Each cell hath within it an absolute power of purpose. Yea, to me it is true—mind is greater than universe, its action and condition hath not limit, its comprehension measureless, its force has ne'er been known, for neither time nor eternity can fathom it. Yea, 'tis the voice of God, which shakes the ether of the worlds and in tremulous atoms floats eternally in the embrace of time to the unknown limits of omnipotence. For it doth not belong to man Yea, it is a growing and never exhaustless force.

I may err, I may grope, but it is with divinity of feeling when I say, I believe mind lived and thrived before man was born. Yea, from the beginning it was a perfected element. Mind hath forever been the same, and I am sure that thus will it ever remain. 'Tis a part of God, 'tis of God. God gave it to man; God carries it back to eternity. "Yea, mind to me is the essence of existence, the one and only indivisible, the one and only omniscient, the one and the only and ever omnipresent. Yea, it is to me as omnipotence. Man's brain, this powerful mass, this twisted shell, this convoluted instrument; yea, the earthly templed home of mind can only be improved. Nay, thou mayest talk with all thy logic, bring ponderous arguments and the profundity of intellect, still I would tell thee how canst thou make perfection in mind when aught else than perfection bides not in it. Yea, how canst thou make mind aught else than mind. Gods, in my quivering soul, I do but think that mind is but the completed force, the perfected element, creation's one indivisible, indestructible and eternally the same. But in this poor brain of man 'tis but the strife of nature to place a universe within the realms of a multi-celled brain. No, no mind is perfect, hath never been made, 'twas ne'er born—but in its use it adapts its God-given self to its humble, brainy abode.

Perchance I may tire thee, but then, let us to the pith and purpose speak of some other functions of this brain. Why, then, let us slowly study this will, the powered denizen of earthly action. Thus, I say, let us slowly study what is will. Will is that power to choose, to select, to prefer. Volition is but the act of willing, or put it plainer still, the will in action. Thus far it is well, thus far it is plain. Now, then, doth it not come in this power to choose and select a mind's decree, a mind's command, a mind's discretive pleasure? Just so, then, what is action? Thus, then, this will is that power which permits our mind to act. Action is but a process, a condition of action or movement. True, it is the start of power. Now, then, this power to choose is but the process of making or selecting by way of preference from two or more things presenting themselves to the mind. Power is the faculty of doing, perceiving, or that which produces effect in both a physical and moral way. Thus, then, are we not told that the will in its healthy way acts by the stimulant of a suggestion or excitation conveyed to the brain. Then this will acts as a function to

the brain under these conditions. Here comes a crowd of ideas to the mind, this mind is permitted or forced by the intention acting through the suggestion or excitation of these ideas—thus, then, under action the will receives or rejects such ideas as it sees fit or proper. Yes, thus thou hast seen that the will then is the sole and only determining element of power of judgment which thy mind has. Yea, it is the acting power of the ruler of man's soul and thus it becomes that in this mind or soul the only thing which most deeply involves it in its integrity is its will. Yea, the only thing dangerous to the mind in its broadest sphere is the will. Aye, the only thing which can menace in its entirety and that is the entire function of the brain, is the will.

This power, this marvel of will moulds the man, moulds the very world to his necessities. Of all the blessings e'er given to man by God there is naught which soul can suggest better than a heathy will. I know and in my inmost soul do think that if there ever was a pictured something which was the incarnation of the Ruler, that one thing is will. Aye, 'tis a function, the very personification of effect and true it is that as it lives and abides in the wonder working brain of man, it is the only element which cannot be forced. It doth seem strange, nay, forsooth, almost incomprehensible, nay, a monstrous contradiction that it matters not what a man may know, if the will determines his mental actions, his mind's virtue and worth can be made as naught as this will decrees. Nature gives the will and will makes the man. Yea, the virtue of a will is the working virtue of the mind. Nay, then, forsooth, take thou this errant mind. Let but itself be a diseased thing, what, then, cannot become its errant action. This will, the acting power of the brain, which, forsooth, gives us the power to select, to choose and to prefer, is simply, that force which is the savior of a soul, the grouper, the selector, the winnower of every errant thought which dwells in the soul of man; back into the deep recesses of man's brain lie his passions; yea, there, too, lie the recorded instances of a wondrous and monstrous past. Now, then, this will, this guardian angel of the mind, is that which sifts the wayward act, analyzes or rejects, or selects and purifies the varied suggestion of mentality into the sanity of action.

This will is perhaps diseased, and when it becomes diseased we find that the mind's balancing power, the very heart of judgment, its strong force of discretion, the harmonizing power of the soul, is gone. Thus, then, in its erratic action there is impulse, or no will, and errant passions becomes the rulers of the brain. Reason is dethroned and blind impulse sways the soul in passions' turgid track, making it well in crime, suicide and murder. Yea, make this man of sick will a creature and slave to drink, theft, lewdness, blasphemy, and dire and hideous crimes. Heavens, it is too true—does not this will in health hold and bind in virtuous sway every passion? Let it become a sickly thing and passions and crime in every form are an easy result. Nay, then, take thy poor neurasthenic, this man whose brain is enfeebled and helpless with a tottering will. Doth there not result all the varied phases of indecision, tortured thought and doubt; yea, all the woeful dreams of dread and fear, the agony of impulsive actions, blind unreasoning? Yea, every pitiful phase of a diseased will. Down, down deep into the depravity of degeneracy, down deep into that state when mind but becomes a mimic play.

Nay, in truth a perfection of will is ever the perfection of a soul. Thou canst go down the varied line of all action in thy sane and in thy insane, study the depths of history, study every conceivable story coming from the dark and varied history of every act performed in this world, from its earliest period to the immensity and grandeur of the present, and thou canst trace all the calamities, misfortunes, crimes, virtues, worth and excellencies to the play of the will. Yea, it is a truth profound, magnificent and immense to think of. The will is this world's controller and ruler. Yea, the will to man is his all and everything. It is the mind's stamp of its finiteness, the stamp which moulds an earthly soul for its future state and has its habitat upon this earth and ne'er was made for heaven. For heaven is that place of supreme happiness, perfect felicity, absolute bliss. Supreme doth mean the highest, greatest and most exalted of happiness and is but the bliss and blessedness of a soul. Nay, then, forgive me if I err, but

true it is that a soul which hath not the necessity to will has arrived at the zenith of mental action. Hence if there be such a place as heaven, and this place is where we have the most exalted happiness, then thus do I argue the most exalted happiness is an unconscious and wondrous flow of satisfaction, where, in this case, the grandeurs and beauties of a heaven would but fill this soul with the transcendent glow of utter contentment, and in utter contentment there is never want, desire, preferment or choice; for, if but want, desire, preferment or choice exist they must be irritant. But a supreme bliss of soul means supreme contentment, and supreme contentment means an absolute wish for naught else than itself; hence there is no necessity for using a will.

'Tis an old saying that "He who does not reason is a slave." This, perchance, might once have been true, but to me 'tis poorly said. For it would have been more truthful that he who doth not reason must be an idiot. For an idiot hath not brain to reason with. What, then, is reason? Reason is that power which gives the mind the gift to determine the virtue of an opinion, to form an impartial ground of conclusion, an intelligent account or explanation or motive for an action, which obtains a more or less decisive proof from opinion. To me the more I think, the more it doth seem that the virtue of a mind depends upon its balance. And doubt it not, this balance depends upon the virtue of a will. It is my earnest conviction, nor can I see by what process we can disprove it, that the most powerful intellect, the most profound mind is to be found in that brain freest from uncontrolled instinct and most perfect in will. Yea, go down the scale and study it well and thou wilt find that the poorest of God's mentally endowed creatures, the hideous pauper of mentality, the idiot, shows itself in striking and marvelous force.

In proportion to the absence of a will, intellect is gone and with it reason, too. Now, then, reason acts upon the past. "All reasoning is retrospect. It consists in the application of facts and principles previously known." So says Foster. Reason has its basis in memory, and this memory doth seem to me to be the product of ancestral crystallization of experience. Nay, it needs not in my humble opinion any ponderous nor extensive defense to prove that in the variations of will do we receive the variations of reason. Nay, the perfection of reason is not dependent upon aught else than the organ from which it comes. Let us take the Mystic, that reasoning lunatic of the frenzied and diseased will. There never was made a better reason than when he reasons and when thou takest into consideration the present condition of the brain, that is, the premises from which it came, his reason is as perfect as it is in the perfect brain, for he but argues from pure delusion, and these delusions are realities to him. Hence the perfection of his reason is as perfect in its course and method as it is in the sane. But delusion marks its action. Accurate reason, the proper determination of an opinion, the perfection of truth, efficient cause and all cannot be anything else than a pure matter of mental health. Aye, if thou wouldst tell me what mind is truly healthful at every period in its mentality, I can guarantee that I can tell thee the purity of its will and reason. Nay, I cannot believe that reason ever guided will. For deep down in my mind, I honestly believe that thou canst not separate reason from will. What part of reason will is I know not; but it is an eternal truth that when thy brain is crowded with a multitude of ideas, it hath the capacity to think or reject such ideas as it sees fit. This capacity to fix or reject these ideas to me implies the power which covers reason, for reason hath its basis essentially in memory, that is, in the application of facts and principles previously known. Thus I think 'tis past experience and, indeed, I must think 'tis ancestral experience. Now, a fixed idea becomes an irritant, and the brain's will acts in response, receiving or rejecting such ideas as it prefers. Thou canst not separate this thy reason from this thy will. They are to me one and the same force, and both only act best when this will is in perfection. All men are instructed more by experience than by reason, accurate reason, just reason is forever the product of a well-balanced mind.

Now, then, what avails reason in thy neurasthenic degenerate, thy nervously exhausted brain, beset with the indecision of doubt? Reason here is its woe and curse; yet, forsooth, reason in its texture is perfect. But an imperfect will permits reason, at the same

time permits indecision. Now if it hath power to select and reject, is not this power a seeming judgment or reason? Ovid said: "What is reason now was passion formerly." But to me it is better said, What is reason now, was instinct then. Nay, then, with the loss of will comes instinct, with a deep flow of instinct is the loss of will and reason. Yea, reverse it, with the loss of instinct doth the beauty of and grandeur of reason and will come. Reason is not only the glory of human nature; yea, sadly so 'tis the voice of disease—yea, a mental infirmity. True, it is reason, and at times is not only a rebel unto faith, but it is a rebel unto anything else, for of it is that reason only comes from what a mind sees. What it sees is affected, not only by the conformation of a brain, but a defect in its function, the mind. Hence the most thou canst make of reason is that it is a slave of mental perceptions, and mental perceptions are all, indeed, guided by the normal or abnormal condition of the brain. So that when thou gave undue distinction to this faculty thou were, indeed, mislead; because to my mind reason has less stability in it than will, than memory, than passions themselves. For it is true as fate, that reason is more a creature of the past than it is of the present; and I for one believe that reason should not assume the broad function given it. While I may not agree with Luther in all things, yet 'twas well said when Luther remarked: "Human reason is like a drunken man on horseback, seated upon one side he tumbles over on the other." Reason is the force of a past, a hereditary transmission more than it is a modern and perfectly competent force.

Will has then the zenith of virtue over and above reason. At times it is true that in its action from result instinct is more perfect than reason. Thus saith Morrell: "True reason and intuition hold a similar relation to the understanding that perception holds a sensation." Intuition may mean a distinct inspection of the mind, a positive and direct apprehension of knowing an act and an immediate knowledge. If I may so say, in perception and consciousness distinguished from immediate knowledge which hath not reason in it. Yea, still better must I say, a truth discovered by direct knowledge, especially first or a primitive truth that cannot be acquired, but is assumed in experience. Now, then, this assumption of experience cannot explain for an instant the intuitive knowledge of a child; for experience it hath none, at least greatly so, as far as the present is concerned. So that if this babe has an intuitive knowledge of things, objects or persons, which we will admit for the sake of argument is only now and then manifest, it must then be the knowledge which it hath gleaned from its ancestors and which has not been gleaned by itself.

Now, then, if Morrell's assertion be true, that pure reason is intuition, then intuition can only be the result of hereditary transmission, and perchance from what we know closely akin to instinct. Nay, upon my soul, ponder as I may, let me grind the molecules of my brain in their infinite cells, still will I maintain that intuition is a force, utterly inexplicable and seems to be the absolute basis of all deduction. Now, then, let us argue a little further on Morrell. He says that pure reason (and pure reason must be the best of reason over and above common reason) is intuition, and that it bears a similar relation to the understanding that perception holds to sensation. Now, then, sensation is but the irritation of a nerve—its action comes from intuition. Perception is but the action of the brain on this irritation, wherein it analyzes, recognizes and determines the character of the irritant; that is, it perceives what has been the cause of the irritation. Now, then, intuition is more than this to my mind. It conveys to the soul the modern and immediate conception, along undoubtedly with a hereditary impress of all those which have gone before it. Nay, upon my troth, think as I may the intuitive process of the brain or the action of perfect reason, if I may so style it, of a brain is what is beyond the present, as it holds within its embrace the entirety of the past. Then, if all reason is retrospective, it consists in applying facts and principles previously known; then is it not true that intuition is but the speaking voice; which impulsively proclaims from some God-given source the wondrous effect of heredity transmitted to a living present.

Now, then, gentlemen, with this I end, and if I have dragged you from the realm of what perchance I may wrongly accuse you of, that is, only the consideration of a dull metallic

commercialism in your future to the wonders of a God-given soulful force, which each and every one of you possess within the realms of a shapely calvarium, then I have accomplished my aim. But I am thus led to predict that the person who looks only to the gilded side of success rarely attains it. For it must ever be that the unconscious, dutiful, studious man, who ever strives to constantly replenish his mind through study, who follows sincerely the true function of his vocation, has within him the brainful power of obtaining the truest element of future reward.

My worthy, yes, my gracious student friends; let me in these fulsome, fleeting moments say—
That whilst thou art happy, hopeful, young, and health is kindly, truly thine—court frugality.
Yea, impress labor upon thy mind; strive, toil—thus thine own honored merited triumph bring;
Make thy mind ply as an honest, industrious force; yea, a devout soulful powered thing.
Thy brain is God's greatest, rarest gift. Yea, for divine growthful, noble purpose was given thee;
If errant use sadly marks its course, it will in surety bring thine own anguished misery.
Heavens! in all life there cannot be a fate more truly sad, abject, benumbed, aye forlorn,
Than when an idle brainful man becomes a thing for pity; yea, a thing of scorn.
Nor does there bide upon our great wondrous earth a more worthy, grander entity,
Than that man who hath to his function been true;
Thus become a man of use and mastery.

Aye, unbare thy arms, close shut thy jaws; hold thyself, thy head erect and earnest pray,
Gracious God! give me power, give me strength to be thy honored, worthy soul of capability.
I seek not praise, I seek not flattery, nor the harrowing, throbbing pangs which ambition brings;
But, my gracious God, grant me healthy functions, yes, broadened use; yea, kindly duties, happenings.
I crave neither power, pomp nor wealth, but earnest crave that glorious perfect function my brain enshrine;
For then, truly, surely do I know, if my soul be strong, that a glorious world is mine.

Laparotomy in Contusions of the Abdomen.

M. Aimé Guinard (Paris) referred to three cases, two of blows on abdomen and one of stabbing, in which he did laparotomy. Of the first two, one was the result of a blow from a heavy joist, the other from the violent kick of a horse, in both of which laparotomy revealed rupture of intestine and escape of contents into peritoneal cavity. But he had not received either case until thirty-six hours after accident, and both were fatal. His third case, however, had immediate laparotomy for a knife-wound in the left groin, received in an affray right in front of the hospital. He sutured two perforations of small intestine and a large tear of the omentum, whereby a considerably artery bled copiously. Healing resulted in a few days, though no drainage was used. He attributed success to the early operative interference, and said: "I call attention to two symptoms which appear to me most important in diagnosing perforation of the intestines in case of contusion of the abdomen: First, the prehepatic tympanic sonorousness; second, rigid contraction of the abdominal muscles, completely preventing all deep manual exploration." He advises small exploratory opening, which is to be extended if gas, feces or blood be found, and which may be immediately closed without detriment if the peritoneal cavity is found intact.

M. Demons thought a light contusion or existence of shock would contra-indicate such interference, at least until reaction had set in, in the latter case.

M. Reclus protested against the exploratory incision, and insisted on the larger laparotomy if interference was made, as he thought it would have to be in most cases.

M. Demoulin related a case of wound of the abdomen with escape of omentum so as to hang down in front of the right hip. A laparotomy showed the existence of a hematoma of the cecum, caused by the same instrument that had let out the omentum. He ligatured two bleeding arteries and the patient recovered.

M. Reboul (Nîmes) gave the case of a three-

year-old child whose left flank was cut open about two inches by falling on a broken glass bottle, causing hernia of the greater part of the small intestine impossible to reduce, whose folds were reddened and glued together. He covered the hernial bundle with antiseptic dressing, and had the child taken to the Hôtel-Dieu, where he operated one and a half hours after the accident. At the moment of operation, besides the small intestine and mesentery, the omentum, colon and stomach had pushed through the wound. He anæsthetized and increased the opening to accomplish reduction. There being no deep lesions and no intestinal perforation he replaced the extruded organs as soon as he had properly cleansed them, though they were deeply injected and agglutinated by filamentous adhesions (from peritonitis). He sutured the walls with three rows of sutures, applied ice, had normal sequel and perfect union. He said: "I insist on the rarity of this case, its gravity, the importance of early interference and the cure we can effect in these cases though peritonitis has already set in."—Progres Medical.

Trumatic Rupture of the Liver.

In the Australasian Medical Gazette, Dr. Someren reports a fatal case of hepatic rupture: A woman, aged thirty-six years, married, nullipara, was seated on a cart, next the driver, passing along a main road, when the driver found it needful to turn off the siding on to the road, and in doing so the cart was tilted suddenly and acutely to the side of the driver. The woman fell against the driver, who, seated on the extreme edge and unprepared, jumped off, thus removing the expected support from the woman, who then rolled helplessly and in a heap off the dray, and fell on her head, while her body lay just across the wheel track. By this time the dray had got on to the crown of the metalled road, and here the wheel went over her abdomen, she lying on her back. She was taken up and put on the dray, supported in a half-reclining position. A little blood issued from her mouth. She made the remark, "I feel faint," and lapsed into unconsciousness. The dray came back to a hotel, about three hundred yards from the scene of the tragedy, and she was taken out and put on a bed, and there she expired very shortly after. It should be mentioned that she seemed at first not to be breathing at all, but just before getting to the hotel she began to breathe better and more perceptibly. The doctor arrived upon the scene very soon after her death, which occurred within half an hour of the accident. There was a very superficial abrasion upon the forehead, just at the parting of the hair, and this was the only mark upon her person anywhere. Pallor was great, but not strikingly marked. From the history he judged that death was the result of rupture of an abdominal viscus, probably the spleen or the liver; but the statement that blood had issued from the mouth made him doubt whether the fall on the head might not have produced some rupture of a cerebral vessel. The coroner ordered a post-mortem. The doctor proceeded to open the abdomen first of all, prepossessed by the idea that he would discover there the cause of death. Beginning with the median incision, he then made a transverse one from the xiphoid cartilage to the right flank, and reflected the flap downward and outward, laying bare the right hypochondrium, and in the course of this came across a blood extravasation in the adipose tissue, which was most abundant, in some parts as much as an inch in depth. This extravasation was just at the edge of the cartilage of the ninth right rib. Further reflection disclosed a fracture of the ninth right rib, the posterior portion overriding the anterior. Opening the peritoneum, he came upon an enormous effusion of blood, and, raising the thoracic wall, the liver could be seen with several rents in Glisson's capsule, which seemed to proceed radially from posteriorly, principally in the right lobe. Passing his hand around the liver between it and the ribs, he ascertained that the overriden fragment of the fractured rib did not penetrate internally at all. Then pushing the hands over the convex surface of the liver backward, he came upon a pulpy mass of liver, merely held together by fibrous shreds. Almost the whole posterior border of the liver was thus macerated, including the whole right lobe and a geater part of the left. The capsule was stripped off in all directions. The mass of blood was enormous. No other organ whatever was in the least injured, though all, naturally, were exsanguine. The concave surface of the liver was comparatively uninjured anteriorly and inferiorly; all the vessels, afferent and efferent, being intact. Approximately speaking, quite half the liver was broken up, and apparently this was accomplished by the posterior portion being crushed against the angle of the ribs and spinal column, and there macerated by the force applied anteriorly and from the right side externally. How a viscus with the characteristics of the liver could be thus extensively, deeply and thoroughly injured, under the shelter of the ribs, by a force roughly calculated as equal to half a ton, and yet not the slightest abrasion or mark be present upon the skin even to indicate that such an external force had been applied, seems a problem in vital dynamics which calls for solution. The woman had on loose but fairly good corsets, her other clothing being of a very flimsy, slight character.—Medical Record.

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THE TENTH ANNUAL CONVENTION.

The tenth annual convention of the National Association of Railway Surgeons—or the "International Association," as it will henceforward and rightly be called—was a pronounced success. The attendance was excellent. The papers and discussions were of a very high character. The meeting was harmonious. The weather was glorious and, finally, the registration of members for the ensuing year was very much in excess of the number who registered last year at St. Louis. According to custom we shall not commence the publication of the official proceedings until the first issue of our new volume, which will be our next issue, to be published on June 1. Meanwhile it is sufficient to say that the election of Dr. George Ross of Richmond, Va., to the presidency was an action in which the association did itself credit, and the decision to meet next year in Toronto was a wise and graceful recognition of the interest which the Canadian members have always shown in the affairs of the association. A novel feature of the convention this year was the daily edition of The Railway Surgeon, which was published each morning during the sessions of the convention and which has already been received by our readers. This was the first time that any medical or surgical convention has had a daily paper published exclusively for its benefit, and it undoubtedly contributed something to the success of an eminently successful meeting.

RETROSPECTIVE.

We cannot close this, the third volume of The Railway Surgeon, without some reflections relative to our past and some hopes for the future. We believe that the members of the National Association of Railway Surgeons will forgive us if we express some pride in our official journal and in the improvement of the paper during the past year. We also believe that all will agree that The Railway Surgeon is a valuable aid to the Association, not only in disseminating among our members the facts relative to traumatic surgery, which are developed at our meetings, but in giving railway surgery and our National Association a standing in the profession and with the railways.

We hope that the new interest shown in The Railway Surgeon of late may prompt the members of the Association to a fuller realization of the fact that it is their journal and that by their individual efforts, as well as by their united action as an association, they can do much to make it a still better and more useful paper.

The columns of The Railway Surgeon are at all times at the disposal of our readers, and while we have never yet lacked material with which to fill its pages, we again solicit papers, reports of cases, correspondence, and all matter of news relative to railway surgery or other matters of interest to our readers.

THE CHOICE OF AN ANÆSTHETIC.

In another column we publish an excellent paper under the above title by Dr. A. I. Bouffleur of Chicago. We do not recall a more logical exposition of the subject and

heartily indorse Dr. Bouffleur's conclusions. The subject of the paper is of vital importance to everyone who is ever called upon to give an anæsthetic or to operate upon a patient who must take one. We are sorry to say, however, that it is a matter which too often receives no thoughtful attention whatever. The statistics which are so favorable to ether have unquestionably done much harm by inducing its general adoption by some surgeons, and in some hospitals, to the exclusion of chloroform, which, as Dr. Bouffleur points out,, is obviously safer in many cases. It is also true that when all deaths really due to ether are accredited to it and chloroform is given only in properly selected cases and by approved methods, the statistical tables will look very different.

We also wish to endorse Dr. Bouffleur's plea for the recognition of the professional anæsthetizer, which we have repeatedly urged in these columns. We shall never feel that all has been done to make anæsthesia safe until only skilled persons are entrusted (except in emergencies) with the important duty of putting people to sleep.

Correction of Deformity Caused by Colles' Fracture.

At a recent meeting of the Practitioners' Society of New York, Dr. McBurney presented a boy of about sixteen years, to show the result of an operation for the relief of deformity and impaired function caused by a Colles' fracture of the radius, one and one-half inches from the lower extremity. Perfect union had resulted after the fracture, with well-marked silver-fork deformity, loss of power of flexion at the wrist, partial loss of flexion of the fingers, a good deal of pain on motion. While recognizing the importance of doing something to give relief, he did not think he could with propriety attempt refracture without a cutting operation. Cutting down upon the bone, he divided this as nearly as he could in the line of the fracture, which ran somewhat obliquely. He was then able to put the parts up in proper position and retain them with a plaster-of-Paris splint. The splint had been removed a week since. There was very little deformity left, and the restoration of function had been extremely satisfactory. Replying to an interrogatory by Dr. Dana, he said the nerve had not been injured, but simply stretched by the displaced bones. Dr. McBurney added that it was common to see cases of this deformity, the doctor being apt to tell the patients that disability would gradually disappear. But it did not, and they went on indefinitely with great loss of function. The deformity was nearly as common as that left by Pott's fracture, and that was very common.—Medical Record.

Iodoform-Calomel in the Treatment of Wounds

The results obtained in the treatment of wound-surfaces and cavities that are difficult to disinfect or from which it is difficult to eradicate completely a disease are detailed by Sprengel (Cent. fur Chir.) who has found this combination especially efficacious in the treatment of tubercular wounds and in tracheotomies necessitated by diphtheric membranes.

If this mixture is strewn upon a fresh wound-surface, after a short time it assumes a grayish appearance, undoubtedly due to an eschar produced by the caustic action of the drug. In a few days this will fall off and be followed by bright healthy granulations.

A chemical analysis of the compound produced shows that the action of the wound-secretions forms a biniodide of mercury from the combination, which is a very powerful antiseptic.

The action of this salt of mercury is not the same if applied by itself, as poisoning may ensue, which does not when the two drugs are combined, as the soluble salt of mercury is only produced in proportion to the secretion of the wound.

The author applies the powder by shaking a curetteful into the wound and then rubbing it thoroughly about with a hæmostat covered by a ball of gauze. A previous thorough drying of the wound is necessary, which can usually be accomplished by packing the wound with sterilized gauze and letting it remain for a few minutes. The powder is then applied and the wound packed with gauze. The author finds that the removal of the packing is greatly facilitated by the slough which forms, as there are no adhesions of granulations to it and the patient has little or no pain when the gauze is removed three or four days later.

In tracheotomies the powder is strewn over the inner surface of the trachea, between the diseased area above and the wound and healthy tissue below. This procedure the author has found greatly hinders the spread of the disease and prevents infection of the wound. In 200 cases he has had 45 to 60 per cent. of recoveries.

The amount of powder employed varied with the case and the age of the patient. He has used a drachm of the mixture without seeing any serious results, and has employed suppositories and balls of the mixture in cocoa-butter in sinuses and cavities without seeing any harmful results.—Amer. Jour. Med. Sciences.

Extracts and Abstracts.

Classification of Acute Peritonitis.*

By N. Senn, M. D., of Chicago.

Acute inflammation of the peritoneum is produced by so many different causes and assumes such varied clinical aspects that it is extremely difficult to formulate a satisfactory classification of the condition. A discussion of its etiology, differential diagnosis, prognosis and treatment, except upon the basis of a clear and comprehensive classification, is fruitless and misleading, and usually results in the deduction of erroneous and often dangerous conclusions. The classification should include the anatomy, pathology and etiology of the disease to be of value in rendering a correct diagnosis and a reliable prognosis, and to enable the physician and surgeon to advise and apply effective therapeutic measures.

I. ANATOMIC CLASSIFICATION.

An accurate anatomic diagnosis is necessary for the purpose of locating the inflammatory process correctly or to trace the connection between it and the organ primarily the seat of infection. During the beginning of the attack and in cases of localized peritonitis, the inflammation can usually be located without much difficulty, while the reverse is often the case after the disease has become diffuse. The inflammation may commence and spread from either surface of the serous membrane, visceral and parietal.

a. Ectoperitonitis.—An inflammation of the attached side of the peritoneum is called ectoperitonitis. As compared with inflammation of the serous surface, this inflammation of the subendothelial vascular connective tissue is characterized clinically and pathologically by intrinsic tendencies to limitation of the inflammatory process. In infected wounds of any part of the abdominal wall in which the peritoneum is exposed but not perforated, the primary ectoperitonitis is occasionally followed by the extension of the infection to the serous surface through the lymphatics, or by the direct extension of the infective process through the tissues until it reaches the endothelial lining. Peritonitis of a visceral origin is always preceded by ectoperitonitis, whether the infection reaches the peritoneal cavity through a perforation or by aggressive extension of the infection from a primary focus through the tissues until it reaches the free peritoneal surface.

b. Endoperitonitis.—What is usually spoken of and described as peritonitis is an inflammation of the serous surface of the peritoneum, which, anatomically speaking, is an endoperitonitis.

c. Parietal Peritonitis.—Inflammation of the serous lining of the peritoneal cavity is called parietal peritonitis. It may occur as a primary affection in penetrating wounds of the abdomen, but more frequently is met with as a secondary disease in consequence of the extension of an infection from one of the abdominal or pelvic viscera, or perforation into the peritoneal cavity of a visceral ulcer or a subserous or visceral abscess.

d. Visceral Peritonitis.—Inflammation of the peritoneal investment of any of the abdominal or pelvic organs is known as visceral peritonitis. The inflammatory process is seldom limited to a single organ, as during the course of the disease adjacent organs or the parietal peritoneum will surely become involved. In diffuse peritonitis the whole peritoneal sac and the serous covering of all the abdominal organs is affected. The nomenclature of visceral peritonitis is a lengthy one, as it includes all of the abdominal and pelvic organs which, when the seat of a suppurative inflammation, may become the primary starting point of an attack of localized or diffuse peritonitis.

e. Pelvic Peritonitis.—Inflammation limited to the peritoneal lining of the pelvis and its contents is known clinically and anatomically as pelvic peritonitis. It is an affection almost entirely limited to the female sex, and in the majority of cases is caused by extension of gonorrhœal infection from the Fallopian tubes or a mild form of pyogenic infection from the uterus, its adnexa, or the connective tissue of the parametrium.

f. Diaphragmatic Peritonitis.—Inflammation of the under surface of the diaphragm is described as diaphragmatic peritonitis, and when it assumes a suppurative type and remains limited, leads to the formation of a subdiaphragmatic abscess. This acute localized form of peritonitis is usually secondary to suppurative affections of the liver and gallbladder, and perforating ulcers of the stomach and duodenum.

2. ETIOLOGIC CLASSIFICATION.

The classification of peritonitis upon an etiologic basis is of the greatest importance and practical value. The nature of the exciting cause frequently determines the anatomic and pathologic varieties. It likewise has a strong bearing upon the prognosis, and often furnishes positive indications as to the methods of treatment which should be adopted. Peritonitis, like every other inflammatory affection, is always the result of infection with pathogenic microbes, usually of the pyogenic variety. The etiology must consider the dif-

* Abstract of a paper read at the Fourth Triennial Congress of American Physicians and Surgeons, Washington, D. C., May 5, 1897.

ferent avenues through which the microbes find their way into the peritoneal cavity.

a. Traumatic Peritonitis.—Primary peritonitis has usually a traumatic origin; that is, the injury establishes a communication between the peritoneal cavity and the surface of the body or some of the hollow abdominal or pelvic organs, through which pyogenic bacteria enter in sufficient quantity and adequate virulence to cause an acute inflammation.

b. Idiopathic Peritonitis.—The occurrence of peritonitis without an antecedent injury or suppurative lesion is doubted by many. It is too early to deny in toto the existence of so-called idiopathic peritonitis, but future bacteriologic examinations of the inflammatory product will no doubt reveal a microbic cause in all such cases. As an isolated affection, peritonitis is found most frequently in females during or soon after menstruation. It is probable that the pyogenic bacteria multiply in the blood which accumulates in the uterus and reach the peritoneal cavity through the Fallopian tubes. It is said to have occurred in consequence of exposure to cold, and is then known as rheumatic peritonitis. Occasionally it has been observed as one of the remote manifestations of Bright's disease, pyæmia and the acute eruptive fevers.

c. Perforative Peritonitis.—Perforation of an ulcer of any part of the gastro-intestinal canal, or of an abscess of any of the abdominal or pelvic organs, or of the abdominal wall into the peritoneal cavity, is by far the most frequent cause of acute peritonitis. Two important and frequent causes are appendicitis and suppurative salpingitis.

d. Metastatic Peritonitis.—This form of peritonitis occurs, like other metastatic affections, in connection with suppurative or infectious processes not connected with the peritoneum. In very rare cases it develops in the course of many of the acute infectious diseases, as scarlatina, smallpox, erysipelas, rubeola, and even varicella. It also occurs frequently in the course of septicæmia and pyæmia.

e. Puerperal Peritonitis.—Peritonitis occurring in connection with septic diseases of the puerperal uterus has for a long time been known as puerperal peritonitis. The infection may extend from the endometrium through the Fallopian tubes, or it may follow the lymph channels or the thrombosed infected uterine veins. Infection through the lymphatics usually results in rapidly fatal diffuse septic peritonitis, while in thrombophlebitis there is a greater tendency to localization, unless the thrombi disintegrate and cause embolism and pyæmia.

3. PATHOLOGIC CLASSIFICATION.

The pathologic conditions which characterize the different varieties of peritonitis neccessarily must be considered in classifying this disease. The pathologic classification is based almost entirely upon the gross and microscopic appearances of the inflammatory exudation and transudation.

a. Diffuse Septic Peritonitis.—Every acute peritonitis is septic in so far that phlogistic substances reach the general circulation from the inflammatory lesion, and in that frequently the inflammation terminates in suppuration; but the term "septic peritonitis" should be limited to those cases of diffuse septic peritonitis in which, as a rule, death occurs in a few days, and before any gross pathologic conditions have had time to form. It is a disease that is almost uniformly fatal, with or without operative treatment, the patients dying from the effects of progressive sepsis. The claim of operators to have cured such cases by laparotomy must be accepted with a good deal of allowance. The microbes which produce this form of peritonitis are those which follow the lymph spaces and are rapidly diffused not only over the entire peritoneal surface, parietal and visceral, but also through the subserous lymphatic channels. The disease is observed most frequently after perforation into the free peritoneal cavity of an abscess containing septic pus; rupture, or perforation of any of the abdominal or pelvic viscera containing septic material; gunshot or stab wounds of the abdomen with visceral injury of the gastro-intestinal canal; and occasionally as the result of infection during laparotomy. The gravest form of puerperal fever is a diffuse septic peritonitis. The subjects of this variety of peritonitis die so soon after the beginning of the disease that at the autopsy no gross tissue changes are discovered. Besides a slightly increased vascularity, nothing is found to indicate the existence of peritonitis. The septic material, formed in large quantities and of great virulence, is rapidly absorbed by the stomata of the under surface of the diaphragm discovered and described by Von Recklinghausen.

b. Suppurative Peritonitis.—Suppurative peritonitis, that is, an inflammation of the peritoneum which results in the formation of pus, is always more or less circumscribed. This form of peritonitis is the most frequent, and is generally associated with more or less fibrinoplastic exudation. The pus is either serous or seropurulent, or may reach the consistence of cream, when it usually is of a yellow color. The accumulation of pus may be so large that upon opening the abdominal cavity it may appear as though the entire peritoneal cavity and all the organs contained within are implicated, but a careful examination will almost always reveal the fact that a large part of the peritoneal cavity and many

of the organs were shut out from the inflammatory process by plastic adhesions. Suppurative peritonitis must therefore be regarded from a practical standpoint as a circumscribed inflammation. The appearance and character of the pus are often greatly modified by the admixture of an extravasation accompanying the perforative lesion which produced the peritonitis. If the pus is thin (serous) we speak of seropurulent peritonitis. It is a serous peritonitis with the formation of pus in sufficient quantity to render the serum more or less turbid. This subvariety of suppurative peritonitis is without exception in combination with fibrinous exudations, which tend to limit the extension of the infective process. Sedimentation of the solid constituents takes place, so that the fluid contains more of the solid constituents in the most dependent portion of the affected district.

c. Serous Peritonitis.—Independently of malignant and tubercular disease of the peritoneum, circumscribed hydrops of the peritoneal cavity is caused by a very mild form of peritonitis, the pus microbes present not being sufficient in quantity to produce pus. Patients usually recover rapidly from this form of peritonitis. The slight alterations of the peritoneum produced by the inflammatory process do not interfere with the transudation of serum, and resorption is affected as soon as the inflammation subsides and the normal absorptive function of the peritoneum is restored. Serous peritonitis is usually more or less complicated by fibrinous peritonitis, as fragments of fibrin are often found suspended in the blood. The serum is generally somewhat turbid, not transparent, and grayish-yellow or reddish in color. As long as the fluid is limited in quantity, it gravitates toward the most dependent parts of the abdominal cavity, in the small pelvis; when more copious, it reaches the upper portions of the peritoneal cavity and first seeks the depression on each side of the spinal column.

d. Fibrinoplastic Peritonitis.—The inflammation results in a plastic exudation with little or no effusion. The character of the exudate depends on the intensity and quality of the bacterial cause. The exudation is often so copious that it has been mistaken for malignant disease. The symptoms are marked cachexia, ascites, uncontrollable diarrhea, and apparent tumor deep in the abdomen. The exudation in the course of time contracts and results in strong bands of adhesion, which frequently flex and distort the organs to which they are attached, which has given rise to another term—peritonitis deformans.

4. BACTERIOLOGIC CLASSIFICATION.

As the essential cause of peritonitis is always the presence and action of pathogenic microbes and their toxins upon the peritoneum, and as the character of the inflammatory process is largely influenced by the kind of microbes which produce the infection, a bacteriologic classification is of the greatest scientific and practical importance. All pus microbes present in sufficient quantity and virulence in the peritoneal cavity can produce peritonitis.

a. Streptococcus Infection.—The streptococcus pyogenes is the microbe which is most frequently found in the tissues in cases of septic peritonitis. The infection spreads so rapidly over the peritoneal surface and through the subserous lymphatics that death, as a rule, occurs from septic intoxication before a sufficient length of time has elapsed for any gross pathologic lesions to form. Absence of fibrinous exudate and effusion are the most striking negative findings at operations and necropsies. Streptococcus infection is the immediate cause of the most fatal form of puerperal peritonitis. After the peritoneum has once been infected, rapid diffusion takes place, and finally the diaphragm and pleuræ are implicated in the same process, and the patient dies from the effects of progressive sepsis.

b. Staphylococcus Infection.—In peritonitis caused by staphylococcus infection the intrinsic tendency to localization of the disease is more marked; the inflammation results more often in circumscribed suppuration and limitation of the infective process by copious fibrinoplastic exudations. As a rule, the inflammation terminates in the formation of thick, cream-colored pus. Different forms of staphylococci are often seen in the same inflammatory product.

c. Pneumococcus Infection.—It is now well known that pneumonia is produced by different microbes, but the diplococcus is found in about eighty per cent of all cases. It is this microbe which occasionally is found as the bacteriologic cause of acute suppurative peritonitis. Weichselbaum has found the diplococcus of pneumonia unaccompanied by any other micro-organism in three cases of peritonitis. In one case the peritonitis and acute pneumonia occurred simultaneously; in the other, double pleuritis followed the peritonitis, but in the last case the peritonitis was undoubtedly primary, and in the absence of any other microbes in the inflammatory product must have been caused solely by the diplococcus of pneumonia.

d. Bacillus Coli Commune Infection.—The bacillus coli commune, a microbe that constantly infests the intestinal canal, is in a fair percentage of cases the bacteriologic cause of acute peritonitis. This microbe possesses pyogenic properties, and in intestinal paresis and perforations escapes into the peri-

toneal cavity, and usually produces a pathologically mixed form of peritonitis—that is, suppurative and fibrinoplastic peritonitis.

e. Gonococcus Infection.—In the peritoneal cavity the gonococcus produces a plastic peritonitis, and sometimes localized suppuration. Salpingoperitonitis and the more diffuse pelvic peritonitis is the most frequently caused by gonococcus infection.

f. Tubercular Infection.—The rapid diffusion of the tubercle bacillus in the peritoneal cavity, either through the circulation or by rupture of a tubercular abscess into the peritoneal cavity, or by extension from a tubercular salpingitis, occasionally gives rise to a form of acute peritonitis characterized as such in a modified way by the clinical manifestations which accompany it. According to the intensity of the infection, or the degree of susceptibility of the patient to the action of the tubercle bacillus, the disease assumes one of the following pathologic forms: (1) Tubercular ascites. (2) Fibrinoplastic peritonitis. (3) Adhesive peritonitis. Suppuration takes place only when the tubercular product becomes the seat of a secondary mixed infection with pus microbes.

5. CLINICAL CLASSIFICATION.

A diagnosis for the careful physician and conscientious surgeon must include the location, extent, causation and pathology of the disease. From the information obtained from the classification already made must be obtained the material upon which to base a clinical classification. Such a classification should serve as a guide in differentiating between the cases which demand surgical intervention and the cases which can be trusted to medical treatment.

a. Ectoperitonitis.—Abscess formation in the subperitoneal connective tissue, as seen most frequently in the pelvis in women, in the cavity of Retzius in men, and in the retroperitoneal space in both sexes, is always attended by inflammation of the under surface of the peritoneum. Such abscesses should be recognized and accurately located sufficiently early to prevent serious complications by an extraperitoneal incision and drainage; or, if the abscess is of a tubercular nature, by tapping, evacuation and iodoformization.

b. Diffuse Septic Peritonitis.—This form of peritonitis is characterized clinically by the gravity of the general symptoms from the very incipiency of the disease; pathologically, by the rapid diffusion of the infection over the entire serious surfaces, visceral and parietal; and, bacteriologically, by the presence in most of the cases of the streptococcus pyogenes in the inflamed tissues. Staphylococci, pneumococci, and the colon bacillus may also be the cause of rapidly spreading diffuse peritonitis. This form of peritonitis usually follows penetrating wounds of the abdominal cavity, complicated by visceral injuries of the gastro-intestinal canal, contusion or laceration of any of the abdominal or pelvic organs, rupture of an abscess or ulcer into the free peritoneal cavity, or the extension of a septic lymphangitis from any of the abdominal or pelvic organs to the peritoneum. Strict aseptic precautions have succeeded in greatly reducing, but not entirely eliminating, the danger from this source in all operations requiring opening of the free peritoneal cavity. In genuine cases of diffuse septic peritonitis surgical intervention is usually powerless in preventing speedy death from toxemia.

c. Perforative Peritonitis.—Perforative peritonitis is manifested by the sudden onset of the disease, by diffuse pain and tenderness, rigid abdominal walls, fever and vomiting, and by the impossibility by inspection, palpation or auscultation to ascertain intestinal peristalsis, the latter being almost positive proof of the presence of gas in the free peritoneal cavity . According to the author's observations, meteorismus peritonei in perforative peritonitis caused by affections of the appendix is rare, while he has seldom found it absent in perforations of any other portion of the gastro-intestinal canal. According to the number and virulence of the microbes which find their way into the peritoneal cavity with the extravasation, the resulting peritonitis is either diffuse or more or less circumscribed. The colon bacillus is invariably present in the inflammatory product, but, in addition, streptococci, staphylococci, putrefactive bacilli, the typhoid baccillus, or bacillus of tuberculosis, according to the nature of the primary affection, may also be found.

Perforative peritonitis must be regarded and treated as a strictly surgical disease. The primary lesion must be exposed and treated as soon as a diagnosis can be made, and the necessary measures applied to limit the extension of the infection and to prevent death from toxemia.

d. Circumscribed Peritonitis.—The symptoms appear suddenly, i. e., are preceded by those incident to the primary disease. The severity of the pain and the extent of the muscular rigidity and tenderness will correspond with the extent of the disease. The intensity of the general symptoms are determined more by the nature and virulence of the microbic cause than by the size of the peritoneal surface involved. The inflammatory focus may be limited to a very small space, or it may involve the greater portion of the peritoneal cavity and organs which it contains. Circumscribed suppurative peritonitis is usually the result of infection with staphylococci, bacillus coli commune, and pneumococci. In

fibrinoplastic peritonitis surgical interference becomes necessary only when intestinal obstruction is caused by the adhesions. In circumscribed suppurative peritonitis the pus should be evacuated as soon as the disease is recognized, and, if possible, by an extraperitoneal route.

Remarks on the Medical Aspect of a System Compulsory Insurance of the Working Classes.

By F. Parkes Weber, M. D., M. R. C. P., London.

As the subject is comparatively little known to the majority of English medical men, in order to make the medical remarks intelligible, I must first give a short account of the German National Workmen's Insurance System, and this account I shall give as nearly as possible in the words of the "Guide to the Workmen's Insurance of the German Empire,"* compiled by Dr. Zacher, permanent member of the Reichs-Verischerungsamt. It will, however, be unnecessary to enter into any complicated details or figures.

The work of social reform was practically initiated by the Message of the German Emperor, William I, to the Reichstag on November 17, 1881. The message, as communicated by Prince Bismarck, was expressed in the following words:

"We consider it our Imperial duty to impress upon the Reichstag the necessity for furthering the welfare of the working people. We should review with increased satisfaction the manifold successes with which the Lord has blessed our reign, could we carry with us to the grave the consciousness of having given our country an additional and lasting assurance of internal peace, and the conviction that we have rendered the needy that assistance to which they are justly entitled. Our efforts in this direction are certain of the approval of all the federate governments, and we confidently rely on the support of the Reichstag, without distinction of parties. In order to realize these views a bill for the insurance of workmen against industrial accidents will first of all be laid before you, after which a supplementary measure will be submitted providing for a general organization of industrial sick relief assurance. But likewise those who are disabled in consequence of old age or invalidity possess a well-founded claim to a more ample relief on the part of the state than they have hitherto enjoyed. To devise the fittest ways and means for making such provision, however difficult, is one of the highest obligations of every community based on the moral foundations of Christianity. A more intimate connection with the actual capabilities of the people, and a mode of turning these to account in corporate associations, under the patronage and with the aid of the state, will, we trust, develop a scheme to solve which the state alone would prove unequal."

Thus the workingman unfitted for work by sickness, accident, invalidity, or old age was to have a legal right to a provision sufficient to render him independent of public charity or poor law relief. This end could only be attained by a sytem of general and compulsory insurance, based on mutuality and self-administration, and the endeavors to attain this end have resulted in the system of workingmen's insurance now employed in Germany. This system consists of three component parts: (1) Insurance against sickness; (2) insurance against accidents; (3) insurance against invalidity and old age. These component parts, which supplement each other to form the insurance system, must be separately considered.

INSURANCE AGAINST SICKNESS

The insurance is intended to secure the insured sufficient relief in case of illness during at least thirteen weeks. All the insured have a legal claim to:

(a) Free medical attendance and medicines from the beginning of the illness; likewise spectacles, trusses, bandages, etc.

(b) (From the third day of any illness which incapacitates from work) a daily sick pay amounting to one-half the daily wages on which the contributions have been based; or else (in special cases) free admittance to a hospital, together with half the sick pay for the family.

(c) Burial money.

(d) In case of women, sick relief during four weeks following confinement.

The insurance against sickness, contrary to that against accidents, is restricted to local organizations, because cases of less importance are continually occurring in which relief to be efficacious must be prompt. The law has therefore authorized the formation of various associations for obligatory insurance against sickness. By the associations being local and self-administrative the management of their funds is more easily controlled, and simulation on the part of the insured is more difficult. The contributions of the different classes of workmen vary from 1 to 3 per cent. of their average daily wages. The law binds the employers themselves, when depositing the contributions of their workmen, to pay a sum equal to one-half the contributions of the employed, so that two-thirds of the whole are furnished by the workmen and one-third by their employers.

INSURANCE AGAINST ACCIDENTS.

The liability law of June 7, 1871, had not the desired effect, partly because the burden of proof was laid on the poor workman seeking

redress, and partly because the person—sometimes a fellow workman—responsible for the accident was often unable to pay damages. Moreover, this law did not provide for accidents caused by chance or by the fault of the workman himself.

The present system of insurance against accidents is carried out under the guarantee of the empire, on the mutual system, by the employers united in trade associations, which may embrace the different branches of industry in certain districts or in the whole empire.

The object of the insurance arrangements is to secure compensation for bodily injury or for death, in consequence of an accident to the workman whilst working for his employer, injuries sustained on other occasions being excluded. As a matter of course the injured man must not have brought about the accident purposely, though the injury may be due to his own fault. The compensation includes the cost of the cure, and in addition a fixed allowance during the period of incapacity for work, or in fatal cases burial money and an allowance to the survivors (widows, children, parents) from the day of death. When the injured person is totally disabled the compensation amounts to two-thirds of his average year's earnings; if only partially incapacitated for work a fraction of this amount will be granted. For the first thirteen weeks after the accident the associations for insurance against sickness (or, in their absence, the employers) have to step in.

In the interest of a fair and suitable treatment of sufferers from accidents the trade associations are, however, legally authorized either to commit at their own costs the care of the injured to the associations for insurance against sickness beyond the thirteenth week, until a complete cure is effected, or they may themselves undertake the charge of the patients at any time during the first thirteen weeks, with the understanding that their outlays of sick pay shall be refunded by the associations for insurance against sickness.

The amount of the compensation is fixed, after a police investigation, by the organs of that trade association in whose district the accident happened. Against this decision an appeal may be made to an arbitration court, composed of two members of the trade association, two representatives of the insured workmen, and a presiding magistrate. This court is invested with the character of a special court of law; in more complicated cases an appeal from its verdict may be made to the Reichs-Versicherungsamt.

Every employer contributes to the burdens of the year in proportion to the risks to which he exposes his association.

As it is evident that both the trade associations and their individual members have a strong interest in diminishing the chances of accidents, the law confers on the associations the important prerogative of prescribing regulations for the prevention of accidents. Through these regulations the employers can be compelled, under penalty of higher assessments, to adopt the necessary measures for safety; the workmen also may be forced by fines to follow the rules.

As regards the participation of the insured workmen in the organization of the trade associations, they are neither members of the associations nor have they to bear any of the corporate burdens. They have, however, to take on themselves a portion of the aggregated liabilities caused by accidents, in so far as, together with the employers, they contribute to the associations for insurance against sickness, to which, as already stated, for practical reasons, the care of patients during the first thirteen weeks of the illness is left.

Accordingly the law permits representatives of the working men (chosen by the directing boards of the associations for insurance against sickness) to take part in the police investigation of accident cases, and in the discussions of preventive regulations, as well as in the proceedings of the arbitration courts and of the Reichs-Versicherungsamt; on all these occasions the workmen enjoy the same rights as the representatives of the employers.

The Reichs-Versicherungsamt (Imperial Insurance Department) is the supreme court for all that has reference to organization, administration and judicature. It is composed of permanent members—a president appointed for life by the Emperor on recommendation of the Bundesrath, and several higher officers similarly appointed; and of temporary members—namely, four delegates of the Bundesrath, and representatives of the employers and employed in equal numbers. Two judiciary officers are added to decide the more important cases, such as appeals to the Reichs-Versicherungamt and the settlements or adjustments of claims in the case of changes in the composition of trade associations. For some of the federal states, special state insurance offices have been established.

INSURANCE AGAINST INVALIDITY AND OLD AGE.

The money to pay the invalidity and old age pensions is furnished jointly by the empire, the employers and the employed. The empire contributes to each annuity the fixed amount of 50 marks per annum, and pays the contributions of the workmen while serving in the army or navy. It defrays the expenses also of the Reichs-Versicherungsamt, and effects gratuitously, as in the case of the accident insurance, the payment of pensions through the post-offices. All other expenses are borne in equal shares by the insured and their employers, and are raised by current contributions.

The carrying out of the invalidity and old age insurance is entrusted, under state guarantee, to special insurance institutions, whose districts coincide with the province or state divisions.

The pension for old age is granted, without proof of disability, to all who have completed their seventieth year. The pension for invalidity is granted, irrespective of age, to every insured person who is permanently disabled (that is, no longer able to earn even one-third of his average wage), and also to persons not permanently disabled, but who for an entire year have been unfit for work, during the remaining period of their disability.

REMARKS.

It can hardly be doubted that a general system of insurance of the laboring classes, rendered compulsory by law (such as the German system) must exercise a beneficial effect on the mass of the poor people, and through them on the whole nation. By such a system every laborer is assured of a certain amount of support in case of illness, accident or infirmity. The insurance subscriptions (paid partly by the empire, partly by the workmen themselves, and partly by their employers) are reduced to a minimum owing to the immense number of individuals thus clubbed together. Some, indeed, may object that a state institution of this kind is "too paternal," or rather "too socialistic," but such terms mean little in themselves. A system which gives the poor workman a certain just sense of security, and, when sick, the feeling that he has contributed something to his medical treatment, must deserve attention. Moreover, it doubtless reduces in number those who, having lost employment by illness of various kinds, become paupers.

An insurance system of this kind presents special points of interest in regard to medicine and the medical profession. The mutual obligation of the different parties concerned in such a system must help towards the proper carrying out of sanitary regulations. It becomes at once the duty of an employer, not only towards his workmen but towards other employers, to see that his workmen do their work under the most hygienic conditions possible. The workmen, moreover, are bound to carry out directions as to personal hygiene, etc., and when ill or injured must submit to be treated by the approved methods, and cannot so easily go wandering about from one hospital to another, as they sometimes do in England.*

It is obvious that the collection of statistics of medical importance must be greatly furthered by an insurance system of this kind. By the necessary registration of cases knowledge must be gained as to the exact relative frequency of various illnesses and injuries amongst workmen employed in different kinds of work, and living in different places.

The statistics must also help in deciding which methods of treatment, at least which practical methods, give the best results when employed on a large scale. By the aid of the insurance associations more hospitals and sanitoria for treatment of the consumptive poor could be erected, both in suitable parts of the country, somewhat after the model of the new sanatorium for poor consumptives at Rupertshain in the Taunus, and in towns, like the hospitals for consumption at London, Frankfurt, etc. In fact, not only sanatoria for consumption, but sanatoria for various classes of convalescents might be profitably established by such an insurance system. Similarly, institutions for Swedish gymnastics and massage might be instituted (or, as in some German towns, private ones might be hired by contract during certain hours of the day) for the use of working men, considered by the insurance doctors likely to be benefited (for example, after injuries to joints, etc.) by such means.

These are some of the advantages which might accrue from such a general system of working men's insurance. On the other hand, it must be acknowledged that medical men are not likely to be well remunerated for their most important share in the work. Medical men would naturally, as in Germany, be found to do the work for very little, partly to have a share in the great undertaking, and partly, doubtless, for the sake of the experience to be gained. After all, however, the medical clubs in England are probably just as bad for the doctor's pockets, do less good to the working classes, and are more liable to be abused by those who could quite well pay the ordinary medical fees.—British Medical Journal.

The Present and Future of Skiagraphy.

By Otto L. Schmidt, M. D.,

Professor of Medicine, Chicago Policlinic; Instructor in Practical Medicine, Northwestern University Medical School, Chicago.

The intense interest aroused by Professor Roentgen's first report on a new method of differentiating the internal structure of opaque bodies was due not alone to its novelty, and the incredulity which it met with, but in a greater degree to the services it promised to render in the healing art. The discovery has proved to be eminently "practical" in its ap-

* New edition, published by A. Asher & Co., Berlin and London, 1896. See also Die Arbeiterversicherung in den Europäischen Staaten (Leipzig, 1895), by Dr. T. Bödiker, president of the Reichs-Versicherungsamt; and Les Assurances Ouvrières en Allemagne (Paris, 1895), by Maurice Block.

* I do not mean that poor patients should necessarily be prevented from changing hospitals when they really fancy themselves badly treated; it would be sufficient if those who now change hospitals for some trivial question of convenience, should have a practical inducement not to do so. Knowledge as to the sequelæ of disease, ultimate results of operations (such as radical cure of hernia, etc.), recurrence of tumors, etc., would be thus facilitated. Certain classes of patients would probably continue to wander, for instance, many neurasthenics, including the *malades imaginaires* of the poor.

plication, the results achieved being not only definite, but at times so startling as to attract the attention of the world.

Shorly after Professor Roentgen made his discovery he noted the difference in penetrating power of the x-ray through his own hand, bringing out all the bony details, in a way that had not been possible before. With a fine spirit of deference to science, which he was to advance materially, he chose for his first human skiagraph the hand of Professor Köllicker, one of the greatest living anatomists. To Roentgen's reasonable claims for the future of the x-ray were at once added the wildest speculations, some of which were advanced with every semblance of complete verification. Stones of the gall-bladder and renal calculi were placed on sensitized plates and shadows obtained, which were described and published in such a way as to lead the readers to believe that they had been obtained while the objects were in situ in the human body. With the improved technique of the last few months but few stones have been demonstrated in the cavities of the body. While our too sanguine hopes were not realized, with improved methods and a better understanding of the scope of the x-ray have come many happy surprises which have been some compensation for our unrealized hopes.

The term "skiagraph" was introduced in English and American literature by Professor Stine, to designate the x-ray picture. Radiograph is also employed, but not so frequently as the other.

For medical work we use both fluoroscopy and skiagraphy, the latter being preferred when it is possible to use it. The sensitive plate will give minutiæ that the retina cannot perceive, and we have the additional advantage of a permanent record for future use. It was thought that the fluoroscope would supplant that skiagraph, but in most cases the plate will catch the details of a picture in less time that it takes to do so with the fluoroscope. A method of photographing the fluoroscopic shadow has been introduced, with the idea of lessening the length of exposure. This has not given pictures with as good definition as the direct method, and it has been but little used. For the detection of foreign bodies in certain localities the fluoroscope is sufficient, but as their removal is often difficult the surgeon usually prefers a picture to which frequent reference can be made; for the observation of moving objects, such as the heart and diaphragm, the fluoroscope alone is serviceable.

The importance of skiagraphy in anatomical study cannot be overestimated. The gross anatomy of the body is fairly well understood; still the accurate delineation of the bones, and especially of joints, is necessarily schematic, as drawings can only be made after a partial or even complete dissection, which must alter to come extent their normal relations. Skiagraphs show with great accuracy the normal positions of bones in the formation of joints; as they are true representations of undisturbed relations, they should be extensively adopted in illustrating anatomical works in place of the schematic pictures now employed. Although the additional information to be obtained in this way cannot be great, that which is gained is of the utmost importance; particularly is it of value in the examination of bones and joints during growth. The ossification of bones has a fairly uniform rate, and text-books give the time when the centers of ossification first appear and approximately the time when it is completed. This process is subject to wide variation in individual cases. The x-ray furnishes us with definite information regarding the ossification of bone, and we are able by this means to note any departure from the normal. We are thus placed in possession of an important diagnostic aid, and one which gives us information not heretofore obtainable. It is possible that we may be able to recognize with greater certainty that protean disorder, rickets, having as its most characteristic feature delay in the ossification of the bone. The opposite condition, of too early union of central and distal ossification, resulting in the early stoppage of growth, will be revealed by the skiagraph. In short, we may confidently look for a flood of light to be thrown on all anomalies of bone nutrition.

One of the earliest applications of the x-ray was to the detection of foreign bodies. It is in these cases that some of the most brilliant achievements have been reached. The power of the ray in depicting a foreign body imbedded in the tissues depends upon the greater density of the former. The general rule is that the greater the specific gravity of an object the more marked the shadow—or stated in other words, the higher the specific gravity, the greater the absorption. This rule has some exceptions. The heavy metals and their salts give dense shadows. Iron, glass and stones are the substances most commonly introduced into the body which are detectable by the x-ray. In a large proportion of cases the foreign bodies become encapsulated, and cease to be a source of danger. In all recent cases, however, where a foreign body can be accurately located in an accessible portion of the body, it should be removed. If the foreign substance causes pain, interferes with locomotion, or leads to suppuration, it should be removed, even though an extensive operation is required.

Fractures and dislocations offer a wide and brilliant field for investigation. By this means we may study a fracture before it is reduced,

and afterward we can see how perfectly it has been done. The latter will often surprise the surgeon. In many cases where there is every appearance of perfect reduction the fluoroscope or skiagraph will reveal marked discrepancies in the apposition. It is needless to comment on the importance of early and correct knowledge of the position of fragments after fracture. In addition, there are fractures in the long diameter of bones and near joints, in which the most experienced surgeons may err, and which are at once revealed by the skiagraph. In many dislocations the value of this method is very great. Especially is this true in dislocations of the knee. These are often attended by so much inflammation and swelling that it is practically impossible to say when perfect reduction has been secured. In these cases a skiagraph can be made which will give accurate information without pain or special inconvenience to the patient.

Skiagraphy will undoubtedly develop important forensic relations. The value of the skiagraph in evidence has not yet been determined, but as the method is based on rigid principles of physics, there can be no question of its ultimate recognition in our courts. Especially will this prove to be the case in the treatment of fractures and dislocations which furnish the basis of the larger number of malpractice suits. We feel safe in predicting that it is only a matter of time until the treatment of most fractures of the extremities will be guided and controlled by the skiagraph.

An important field for the x-ray is in the diagnosis of diseases of bone. Tuberculosis and other diseases alter the normal lines and the density of these structures so that we can often determine the extent and character of the disease. A bone tumor, being of less density than the surrounding tissues, would present less resistance to the passage of the rays, and in consequence could be recognized. Chronic inflammation with its consequent structural alteration can easily be recognized. Osseous deformities, both congenital and acquired, will furnish an important field of investigation.

Thus far we have considered mostly surgical affections, but it is reasonable to suppose that valuable data may be obtained by the x-ray in internal medicine. As tissues differ in structure and chemical composition, a certain limited differentiation is obtained in the skiagraph. The lungs, for example, because of their contained air allow the rays to pass readily, consequently they are shown as light shadows, and can be differentiated from the heart, diaphragm, and liver. The heart with its dense muscular structure, rich in salts, throws a dark shadow by which its border is easily recognized. Aneurisms and tumors containing blood are easily identified when situated in less absorbent tissues like the lungs. Skiagraphs often show the skin and fatty tissues, and occasionally muscles may be outlined. These details are usually more apparent in the negative than in the print. These facts lead us to hope for great advances, that will come in the future with a better understanding of the process, and improved technique. At present the practical range of application seems to be limited to a differentiation of bony structure, calculous deposit, solid tumors, and foreign bodies.

With perfection of technique a skiagraph ought to reveal everything visible with the flouroscope, except in the case of movable shadows, as of the heart and diaphragm. Fluroscopy requires much less time, but an exceedingly practiced eye. Therefore some observers prefer and have been much more successful with the screen than others.

The left border of the heart, the diaphragm and the liver can be readily seen, also moderately extensive consolidations in the lungs, pleuritic exudations and aneurisms; but as to the diagnosis of atheromatous cardiac arteries, mere pleuritic adhesions, the accurate size of the kidneys, and many similar complicated conditions, proof must be brought before these statements can be accepted as of positive diagnostic value.

The great drawback to the screen is its phosphorescence; this blurs outlines and produces false shadows. Mr. Edison is recently quoted as having removed this fault in part.

Skiagraphy is much more difficult and subtile in its medical than in its surgical application. The latter has been fairly well exploited in the short time since the discovery of the Roentgen ray, while at present more attention is being paid to the medical possibilities.—Medicine.

BOOKS AND PAMPHLETS RECEIVED.

"Contribution to Traumatic Abdominal Surgery," by Thomas H. Manley, M. D. Reprinted from the Annals of Surgery.

"Results of (Chemical) Electrolysis versus Divulsion or Cutting of the Treatment of Urethal Strictures," by Robert Newman, M. D. Reprinted from the Medical Record, March 27, 1897.

"Functional Indigestion, Its Causes and Treatment," by J. M. G. Carter, M. D. Reprinted from the Medical News, October 24, 1896.

"The Prevention of Infectious Diseases," by J. M. G. Carter, M. D. Reprinted from the Journal of the American Medical Association, August 22, 1896.

"On the Treatment of Fractured Shafts of Bone in Children, Simple, Complicated and Compound," by Thomas H. Manley, M. D. Reprinted from the Journal of the American Medical Association, October 31, 1896.

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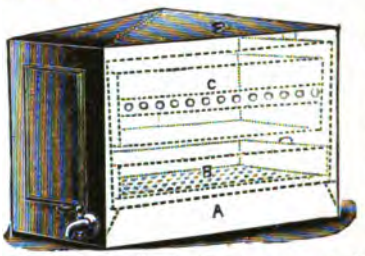

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A BI-WEEKLY JOURNAL OF TRAUMATIC SURGERY.

VOL. CHICAGO, MAY 18, 1897. WHOLE NUMBER 77.

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MONADNOCK BLOCK,
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1897.

AN ANTIDOTE FOR OPIUM DISCOVERED.

Dr. Shep A. Rogers, Prof. Anatomy and Clinical Surgery, Memphis Hospital Medical College, assisted by Doctors Watlington and Brooks, the latter late physician in charge of Hot Springs., Ark., Keeley Institute, made a test of the Tri-Elixiria Opium Antidote.

Tri-Elixiria has been widely and favorably mentioned by the leading medical journals of the world, and is being successfully used by a large number of physicians in their practice. It is prepared under an open formula, which enables physicians to prescribe it intelligently:

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Mandragora Off. (Extract) Q. S.	

DOSE—One (1) teaspoonful in fourth (¼) of a glass of water eight (8) times a day for opium and its preparations, as morphine, laudanum, etc., and for other drug addictions.

The test patient had taken the Keeley and Dr. Stephens treatments without any permanent relief, in fact he claims that after he was "off" of these treatments he suffered so with nervousness and consequent restlessness and morphine pains, that there was nothing for him to do but to fly to the drug for relief. His case was, therefore, deemed a suitable test, and when his treatment was completed the following report was made:

THE PHYSICIANS MAKE A REPORT.

Beginning treatment in this case on November 10, 1896. The whisky cure was given first. His physical condition was considered average, taking into consideration surrounding circumstances.

From November 10 to November 14 he drank whisky continually, until on the morning of the 15th he would not drink any more, being very much disgusted with it. Considering him cured of this habit we decided to put him under the treatment for the morphine habit. Notwithstanding his continued hard drinking for several days and nights he suffered absolutely nothing from nervousness, neither did his circulation receive that shock that is always consequent upon a sudden let-up on whisky after a prolonged drunk.

This was considered by us as most remarkable, reasoning from analogy. This extreme nervousness in connection with these serious cardiac symptoms are pathognomonic symptoms following a withdrawal of stimulants by all other whisky cures. Indeed, these symptoms are of so common occurrence and so distressing that in most cases they are compelled to call in the aid of a little more whisky, as it is considered the best and only sedative in such cases. This, happily, is not the case in the treatment for dipsomania with Tri-Elixiria.

After having been put on the morphine treatment his general system underwent a complete change. His appetite improved, he slept better the first night, and continuously night after night thereafter until he now enjoys perfect rest.

The patient never suffered a pain while under the treatment for the morphine habit. Contrary to the general condition of a morphine habitue on treatment, this man's recovery was progressive and rapid from the beginning of his treatment. His eyes and skin lost that yellow, parchment color, his bowels became regular, his circulation improved, he felt every day the increasing symptoms of returning manhood. He never suffered a minute with that indescribable, half-insane feeling, "melaise," with which all opium habitues are familiar. His general condition we now considered first-class. He has now been without drug stimulants for over seventy-two hours and has no desire for the drug and shows no signs of debility. This cure was accomplished without the aid of emetics or purgatives or unpleasant treatment; in fact, we consider it a rational, humane and scientific treatment.

SHEP A. ROGERS, M. D.
OBE F. WATLINGTON, M. D.
J. B. BROOKS, M. D.

The physicians signing the above report are competent judges. They have seen a great number of patients under treatment at other sanitariums and pronounce the cure effected in Mr. B.'s case as one which it would have been hard for them to have believed could be accomplished, but having entire control of the patient, remedies and diet, they experienced little trouble in accomplishing this result.

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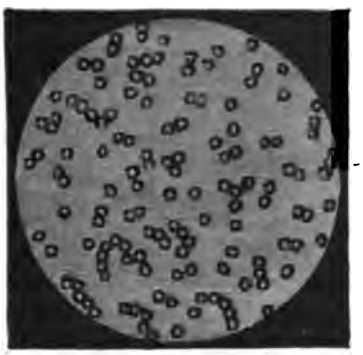

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In short, it is now an established fact, that if Nature fails to *make* good blood, *we can introduce it.* Nothing of disease, so far, has seemed to stand before it.

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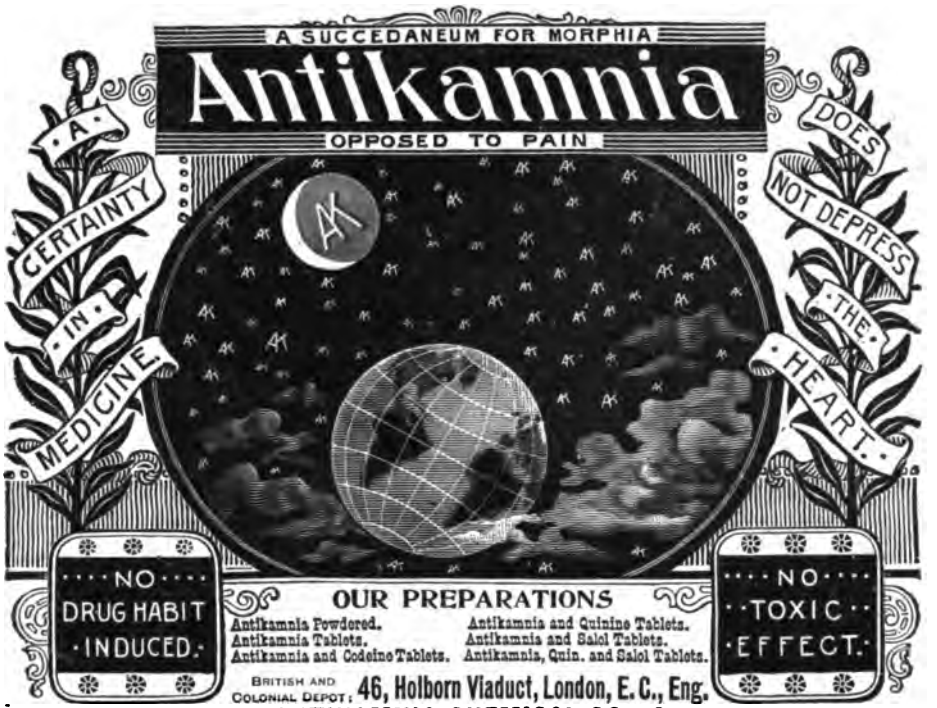

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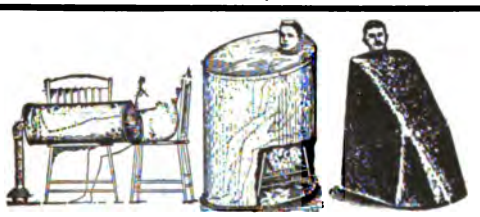

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